Korg M1

Sequencing & Recording Handbook

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By Dan Walker

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Korg M1

Sequencing & Recording Handbook

By

Dan Walker

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Preface

The M1 is Korg's first offering in its new line of integrated machines. It qualifies as a complete workstation, supporting tremendous facility in both synthesis and MIDI recording.

Both facets of the instrument have been designed to operate independently and interactively. The synthesizer represents the latest in wave-table synthesis technology, in the tradition of Korg's DW series machines and Roland's ground-breaking D-50. Within an elaborate collection of sound parameters, new and fascinating timbres are possible. Likewise, the sequencer is designed competitively with current trends in sequencing software development.

This text restricts itself to the issues of MIDI recording on the M1. The machine's capability in this area is vast and deserves a careful study to fully appreciate the results possible when working with it.

M1 Sequencer features include:

- 16 dynamically allocated voices.
- 8-channel multitimbral.
- 8 tracks.
- Each track can be edited and balanced separately.
- Automatic Punch In/Out.
- Pattern Mode supports drum-machine-style recording.
- Patterns can be input anywhere within tracks to conserve memory.

- Up to 8 tracks (8 channels) can be recorded at once.
- Event Edit Mode allows the user to insert, replace, delete or move individual MIDI events.
- Built-in sampled drum sounds.
- Sends and receives MIDI Song Position Pointer.
- Four audio outputs let you assign each track to one of 9 positions in the stereo spectrum (outputs A & B) or cut them out of the mix for individual processing treatment (outputs C & D).
- Select two effects per song from the 33 programmable effects available and then arrange them in parallel or series.

This book takes you on a tour of these primary functions and all others related to the M1 sequencer. You'll work with them individually and then jointly, applying them pragmatically to your own unique musical demands.

Chapter 1

Background Information

Read this first chapter if you've never worked with a sequencer before. If you have, you might want to skim over it quickly to review some of the basics. We concern ourselves with fundamental principles here, necessary in understanding the workings of a sequencer and the manipulation of MIDI data.

What's MIDI?

MIDI is an acronym for Musical Instrument Digital Interface. Specifically, MIDI is a language by which electronic keyboards, drum machines, sequencers and a whole world of musical machines talk to each other.

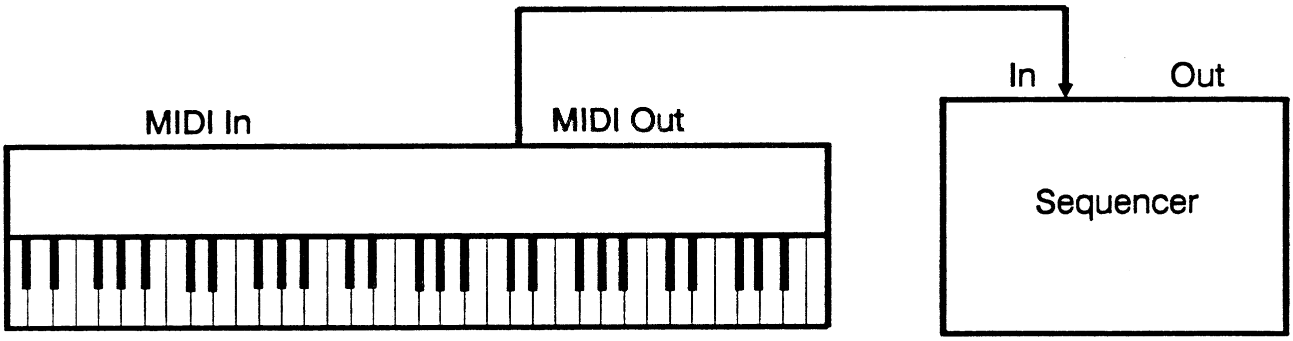
Originally MIDI was developed so a player could *trigger* the sounds of two or more keyboards from one *Master* keyboard. In this way, the player could set one keyboard to play a string sound, another to play a brass sound, another to play a piano sound, and then control *all of them*, literally a full *orchestra*, with only two hands. Drum machines and other electronic instruments soon became interactive, and before you knew it, MIDI became the catch phrase of the music industry.

The MIDI language is an industry standard, so you can connect instruments made by various manufacturers and they'll communicate. In fact, any machine equipped with MIDI, be it old or new, made in Japan, America or on Saturn can communicate with any other MIDI device. If a machine has the two basic IN and OUT MIDI ports, then it can transmit and receive MIDI.

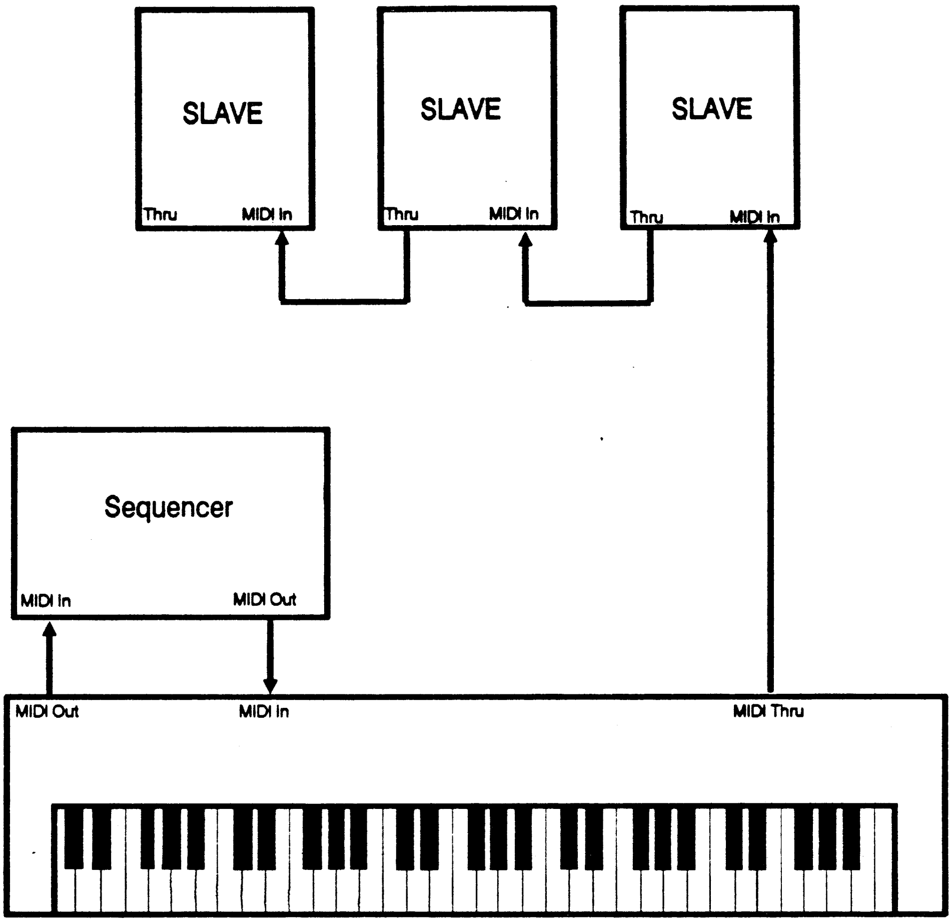
The new MIDI technology proved so effective in triggering sound-producing machines like keyboards and drum machines, it was soon being used to communicate to computers. Since computers can store information, or *data*, it became possible to actually record a performance played on a MIDI keyboard.

The Sequencer

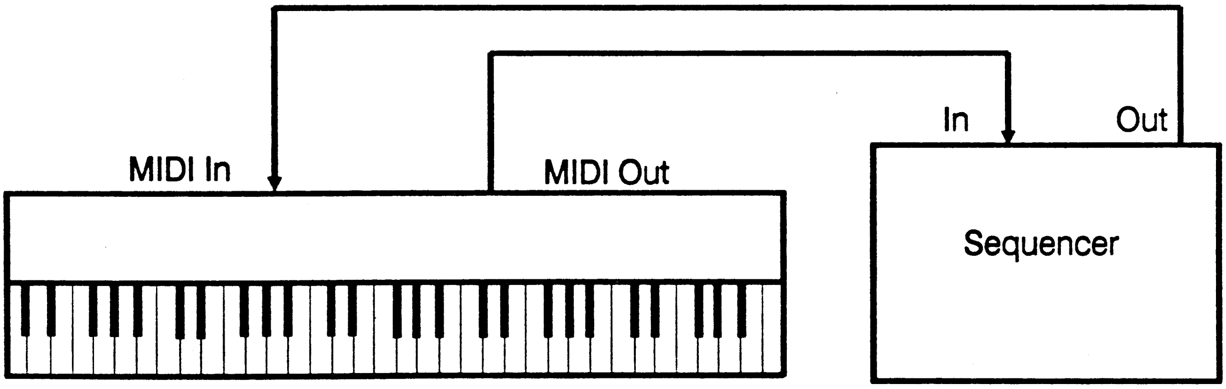
By definition, the sequencer records MIDI data transmitted by a MIDI controller like a keyboard, MIDI guitar or MIDI drum pads.



During playback the sequencer transmits the data back to a *sound module*, which can be anything that receives MIDI information and produces a sound, like keyboards or rack-mounted synthesizers, samplers and drum machines.


SLAVE
Thru
MIDI In
SLAVE
Thru
MIDI In
SLAVE
Thru
MIDI In
Sequencer
MIDI In
MIDI Out
MIDI Out
MIDI In
MIDI Thru

In the simplest setup, the controller keyboard is also the sound module receiving the playback.


MIDI In
MIDI Out
In
Out
Sequencer

The sequencer can alter your performance in a wide variety of ways. Some of the more common editing capabilities include auto correcting the rhythm (quantizing), transposing all or part of the recording, and changing the sound of the instrument playing the part.

All this is can be done AFTER you record the performance!

- *The performance is stored in the form of MIDI data on data card or computer disk.*

All the recordings you make using the sequencer can be stored in the form of data on Korg's MCR - 03 data card or onto a computer disk if you have a system exclusive program for your computer.

Unlike most computer sequencers, the M1 retains its memory after being powered down.

The Three Basic Components of a MIDI Studio

In describing the strengths and limitations of sequencers, I've begun to define the basic components needed to accomplish a MIDI recording.

The sequencer itself is the central feature, receiving the performance messages, editing and storing them, and then playing them back.

A controller like a MIDI keyboard, a guitar or wind controller, or MIDI drum pads is needed to transmit the performance messages to the sequencer. Often times, all types of controllers are used throughout a sequencing session.

Finally a sound module or modules are necessary to actually play the recorded MIDI performance transmitted by the sequencer during playback.

Your M1 workstation comprises all three of these basic requirements needed for a MIDI studio.

- The keyboard itself is the controller device.
- The built-in 8-track sequencer records the messages sent from the keyboard.

- The synthesizer is the sound module that plays the performance recorded by the sequencer. It can receive eight MIDI channels at once and thereby produce up to eight sounds or programs at the same time.

With the M1 you have all the equipment you need for a complete 8-track instrumental arrangement.

Tracks vs Channels

The concept of tracks versus MIDI channels -- how they're different and also alike -- can prove confusing to the beginning MIDI recordist. If you've never used a sequencer before, read this next section carefully.

MIDI Channels

MIDI information is transmitted and received on channels, similar to the way your television set receives signals that are broadcast on different channels. The television receives the channel you set it to and ignores the rest. In MIDI, a slave device set to receive a particular channel responds to that one channel and ignores messages on all others. MIDI channels serve to *direct the information* from the transmitter to the proper receivers.

Think of your M1 keyboard as the controller and the M1 synthesizer as eight separate sound modules. Each sound module can receive a different MIDI channel, thereby producing a separate sound.

Tracks

A Track on the M1 is the *Recording Area* providing the space to record your data. This is exactly like tracks on a tape recorder and similar to the tape machine; you must always record on an empty track or you'll replace the current data with new data.

So the difference between Tracks and Channels on the M1 is this:

- **Tracks** are used for the recording process. All recording is done on Tracks 1 through 8.
- **MIDI Channels** assign data to the receiving sound modules or sound programs inside your workstation.

Chapter Summary

I've tried to include as much basic information on the subject of MIDI as is necessary for you to get the most out of your M1 sequencer. This, of course, isn't the summation of all such information available. So, if you find yourself challenged beyond this book and want to know more about MIDI and how it works, pick up a copy of *Making MIDI Work* by session player Dave Crigger and *The Murphy's Law MIDI Book* by systems expert Jeff Burger, both from Alexander Publishing.

Remember the three basic components of a MIDI studio:

- **The Sequencer** - Receives and stores the MIDI recording.
- **The Controller** - Transmits the MIDI data to the sequencer.
- **The Sound Module** - Receives data from the sequencer and plays back the recording.

All three components are included in your M1 workstation.

Chapter 2

Hook Up

It's important that you make all the correct connections now so you won't find yourself scratching your head later, wondering why your setup isn't working properly.

A/C Connections

Connect your M1 to standard 120-volt wall current. Units sold outside the United States come properly equipped to accept the normal A/C voltage in your country.

The detachable extension cord makes for easier packing, but it also means you might forget it when you move your machine. Pick up a spare from your Korg dealer before you actually find occasion to need it and you won't have to worry.

Surge Control

I recommend that you invest in a Surge Control Power Strip for all your electronic instruments. Wall current is constantly fluctuating in intensity, and often a surge or *spike* can cause damage to a delicate piece of electronics. Most computer manufacturers advise that their products be protected from such spikes by plugging them into a Surge Controller of some kind.

You can buy a six-input Surge Control power strip for under 20 dollars in most cases, and not only does it protect your expensive electronic gear, but it also makes life easier by eliminating all those extension cords.

Audio Connections

Your M1 workstation supports four individual audio outputs as connections to a sound reinforcement system. These can be connected in a variety of ways depending on the capabilities of your studio.

Headphones

Of course, the simplest method to hear your M1 is to plug in a pair of headphones. Each track in the sequencer can be panned within the stereo spectrum in a variety of ways, and headphones provide the best listening environment to hear fine detail.

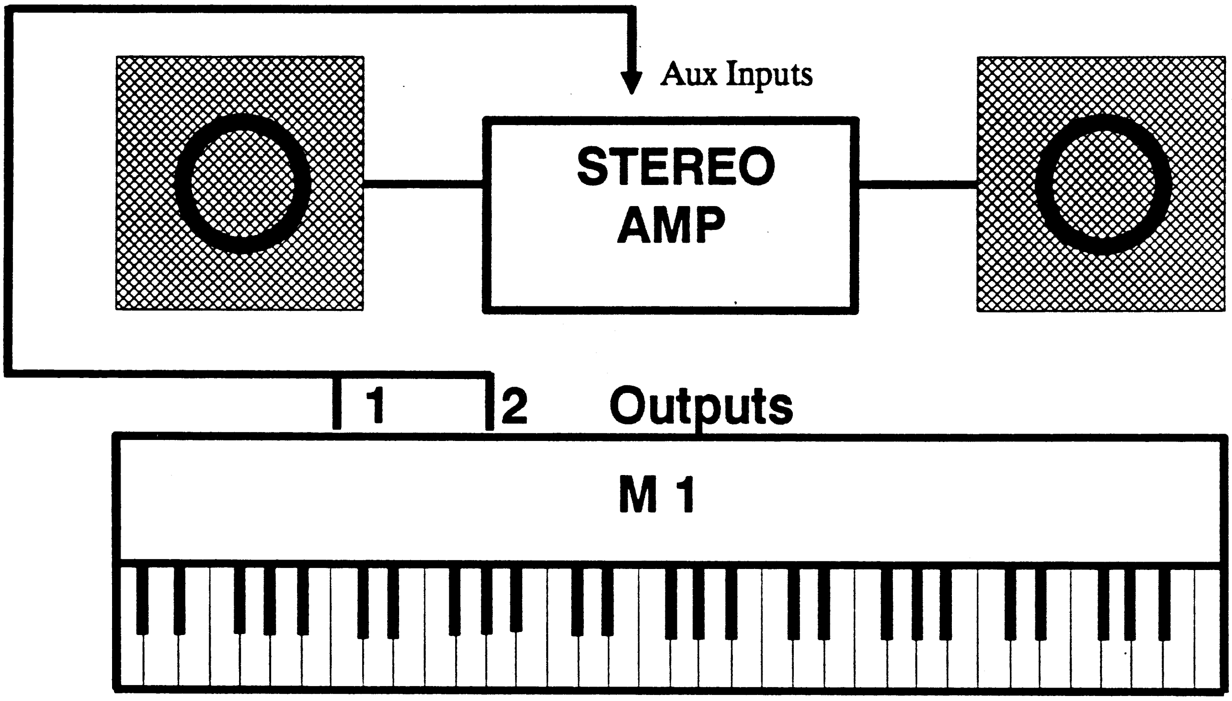
The jack labeled *Phones* on the rear panel of the machine accepts a 1/4" stereo headphone jack. Walkman-style headphones that have the 1/8" jack can be used with an adapter which can be picked up at most electronics stores.

Sound Systems

There are three sound system types:

Stereo System - Your home stereo setup is probably one of the best sound systems you can use. Most home systems are built for a wide frequency response and so are perfect for your M1, which produces sound in all frequency zones.

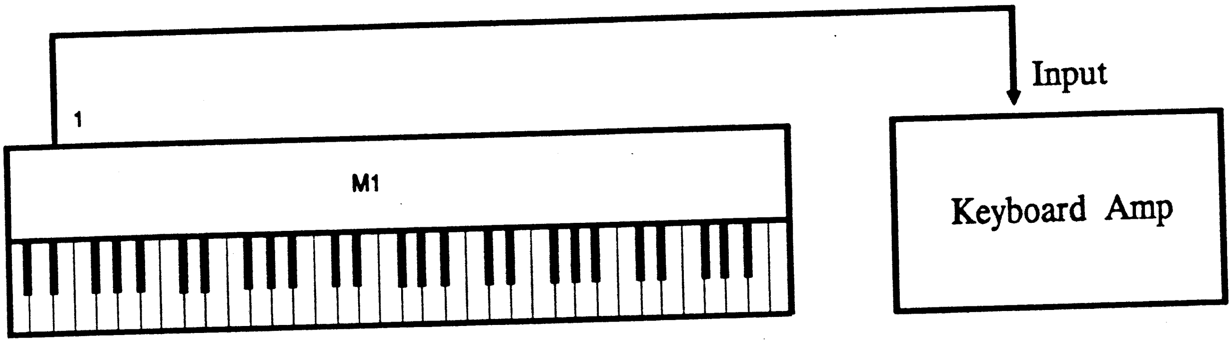
To connect the M1 to your home stereo system, you'll need two audio cables, each with a 1/4" plug on one end and an RCA plug on the other. Plug the 1/4" ends into the 1/L and 2/R jacks on the rear panel of the M1, and the RCA ends into an *auxiliary input* on your stereo amplifier.



You don't have to worry about electrical compatibility between your synth and your sound system because the amplifier just treats the keyboard as it would a tape player. However, you do have to watch your volume level or you could damage your speakers. You'll know when it gets too loud.

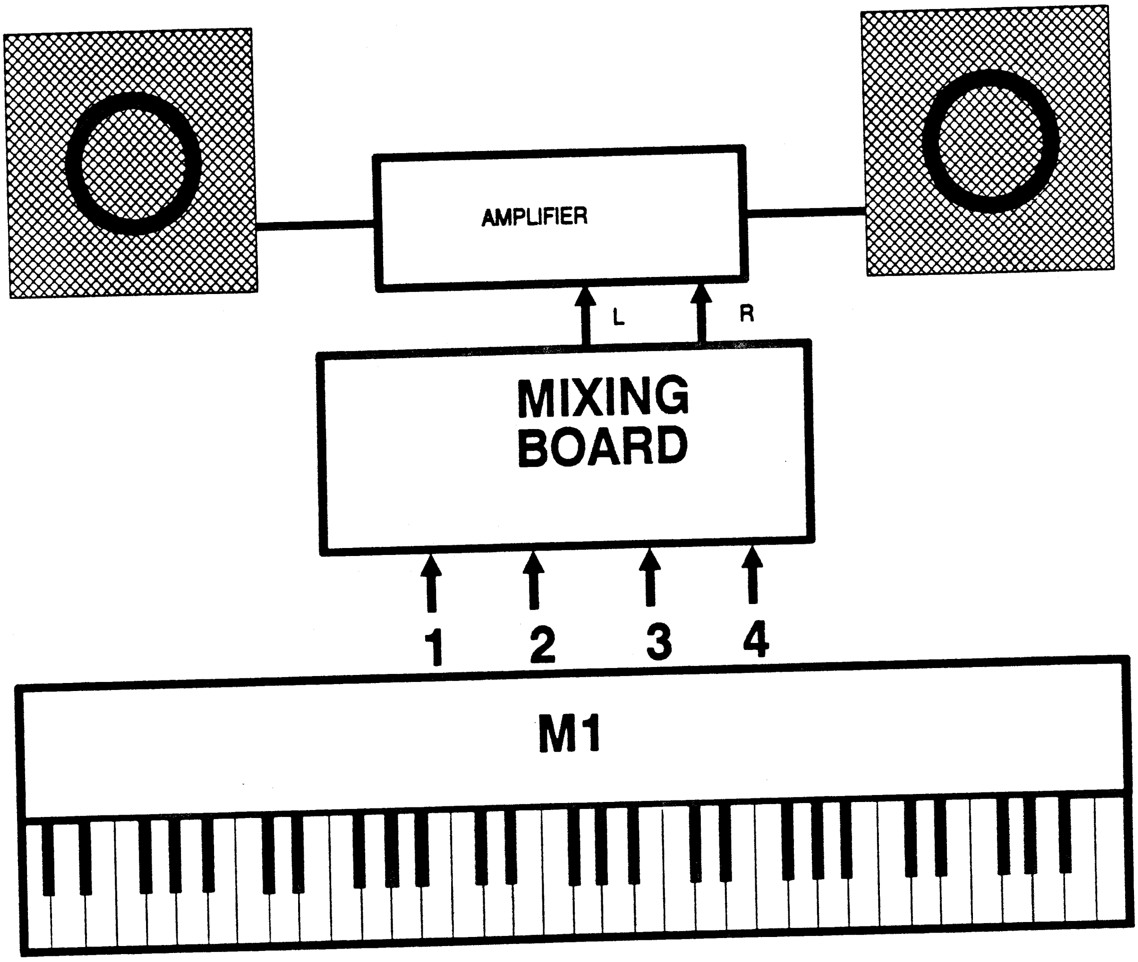
NOTE: If you have additional sound modules, or you want to use all four outputs on your M1, you can still use your stereo system, if you have a mixing board. See Modular System below.

Keyboard Amp - There are a variety of amplifier/speaker combinations on the market built especially for keyboards. They provide a full frequency response and vary in size and power depending on different uses. These are good for studios or small live situations where volume levels are not at an extreme. The only drawback to an integrated system like this is sacrificing a stereo signal that your M1 produces.


1
M1
Input
Keyboard Amp

Modular System - This is the most professional setup of the three. Modular systems can include a wide variety of components that fit into these three catagories:

- An amplifier
- Speakers
- A mixing board


AMPLIFIER
L
R
MIXING BOARD
1
2
3
4
M1

NOTE: You can use your stereo system as sound reinforcement in this scenario as well. Just plug the mixing board into an auxiliary input on your amplifier and you're set.

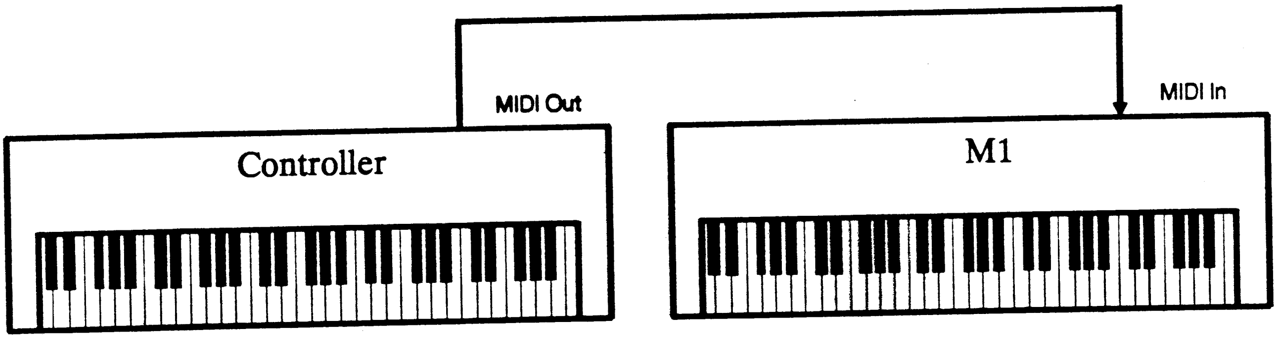
MIDI Connections

MIDI is the transfer of information back and forth between a master device and the slave device(s). The flow of information is always in one direction, *out of the Master and into the Slave.* Keep this in mind and even if you've never hooked up any MIDI equipment before, you'll get it right every time. Most commonly, sound modules are connected to the M1 as additional slave devices to be played by the sequencer. But you can connect a controller to the workstation too, to be used as an input device to the sequencer or when you're using the M1 just as a sound module.

Connect the M1 to a MIDI Controller

The sequencer in the M1 acts as a slave device during the recording process. It receives MIDI messages from a controller which generally will be the M1 keyboard itself. If you want to use an alternate controller, it's easy to make the proper MIDI connections.

The flow of information is OUT of the controller and IN to the M1. Hook up one MIDI cable from the OUT port of your controller to the IN port of the M1 like this:



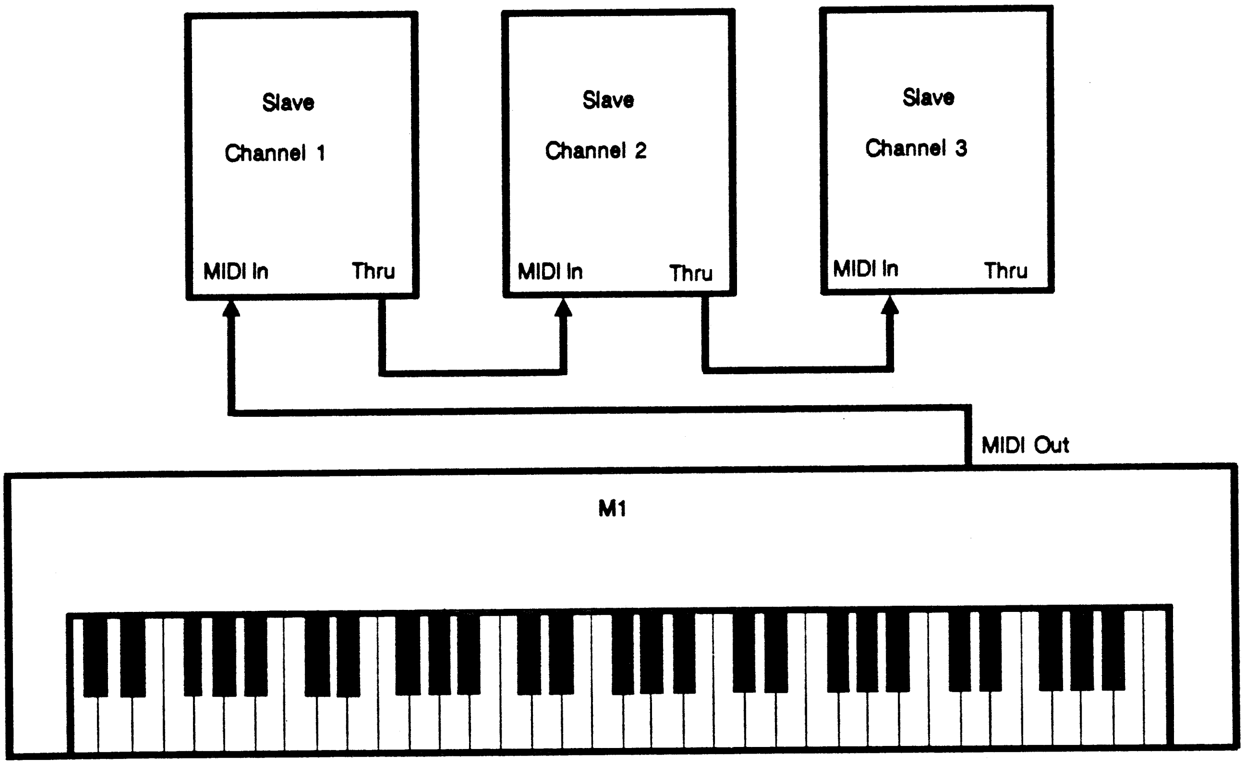
When set up this way, the M1 becomes a slave device to the controller. The M1 sound programs respond to the controller's messages, and a performance played on the controller can be recorded by the sequencer.

This doesn't mean the M1 keyboard is disconnected from the machine's synthesizer and sequencer. It can be used alternately or in addition to the outside controller. In fact, you can play the M1 keyboard while a friend plays the outside controller, and trigger different sound programs as the sequencer records the whole jam session!

Connecting Multiple Slave Units

Although the M1 is capable of producing a full 8-track MIDI recording purely on its own, you might want to connect additional sound modules for sound variety and versatility. Ideally, a well-balanced MIDI studio includes a number of slave units, each representing a different synthesis type (digital F/M, analog, the new L/A synthesis) and sampling technology.

If you have other MIDI-equipped sound modules at your disposal, here's how to set them up.

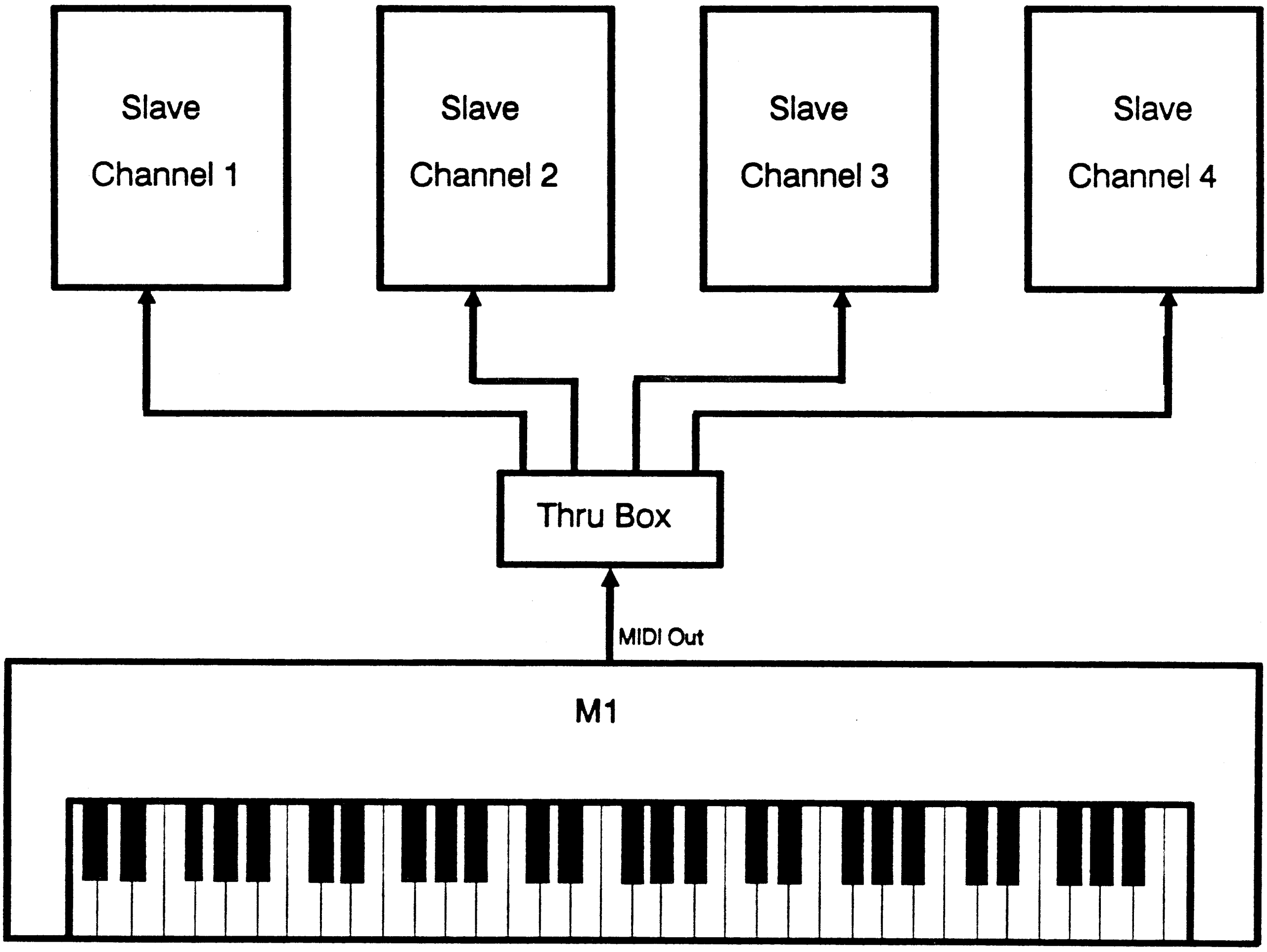

Slave
Channel 1
MIDI In
Thru
Slave
Channel 2
MIDI In
Thru
Slave
Channel 3
MIDI In
Thru
MIDI Out
M1

With M1 as the controller, both the keyboard and the sequencer transmit MIDI messages to the slaves.

The Thru Box

If you have more than three slave sound modules in your system, it's best to plug them in by way of a THRU BOX. A Thru Box acts like a signal splitter to prevent any MIDI delay that can be caused when information has to travel through many machines to reach the end of the chain.

Set up a Thru Box in your system like this:


Slave
Channel 1
Slave
Channel 2
Slave
Channel 3
Slave
Channel 4
Thru Box
MIDI Out
M1

Chapter 3

The M1 Sequencer/An Overview

All sequencers, regardless of make and model, perform basically the same fundamental functions: recording, editing, storing and playing of MIDI data. Within these common roles, however, they often differ greatly in ability and operation.

Consider this chapter an introduction to the particular sequencer built into the M1 workstation. The discussion here concerns itself with the basic format employed, in terms of data organization, editing capability and page construction (what you expect to see on the display). Its purpose is to help you feel comfortable with your working environment in preparation for the recording and editing details to follow in Section 2.

Physical Environment

The order of buttons and information on the display collect to form the *physical working environment* on the M1. The buttons needed to operate the sequencer are few and so, multi-tasking. Together they select display pages, parameters and parameter values.

Button Controls

[SEQ] - Press the [SEQ] button to enter Sequencer Mode where all recording and editing functions are accessed.

[INT] & [CARD] - These buttons select between Internal memory and external Card memory. Each bank holds up to 10 Songs.

[CURSOR] Keys - The eight cursor keys across the bottom of the display select parameters shown on the display. The currently selected parameter is underlined.

[DATA SLIDER] - Selected parameter values can be changed using the Data Slider.

[UP/DOWN] - The arrow keys (to the immediate left of the display) change the currently selected parameter value by individual degrees.

[PAGE +/-] - The Page keys (to the immediate right of the display) scroll through the various pages included in the current Mode. There are 32 pages in Sequencer Mode.

[REC] - The Record button puts the M1 sequencer in record ready.

[START/STOP] - The Start/Stop button engages and disengages play or record.

[RESET] - The [] symbol on the display shows the reset function. By pressing the cursor button below it, you return to measure number 001.

[TEN KEY PAD] - Use the Ten Key Pad to select the first page in each function. There are 10 functions in Sequencer Mode (0 - 9), each containing three pages. To move from function to function rapidly, press the corresponding Ten Key Pad button and then select the page with the [Page] buttons. *Consult page 65 of your M1 owner's manual for a chart listing all 32 sequencer mode pages.*

The dominant feature on the face of the machine is the display itself.

Reading the Display

To access the Sequencer Display press the [SEQ] button, located at the bottom of the array to the left of the display.

The display is where all communication between you and the M1 takes place. It's large enough to hold a substantial amount of information, indicating parameter values relating to the current mode the machine is in. By pressing the [SEQ] button, you enter Sequencer Mode where all functions from recording to editing are performed.

The main Record/Play page shown first is where playback and Real Time recording is performed. Across the top of the display you'll find:

- The Song number.
- The Song name.
- The available RAM memory remaining.

The bottom of the display from left to right shows you:

- The current MODE (either Record/Play or Punch).
- The Song NUMBER (Songs are selected here).
- The TRACK number (1-8).
- Next to the track number is the current MEASURE number.
- The current TEMPO setting (not necessarily the programmed tempo for the Song).
- The sound PROGRAM number (I00 - 99/C00 - 49) assigned to the currently selected track.
- The VOLUME setting (00-99) for the displayed track.
- RESET [> <].

Functional Environment

The organization and hierarchy of recorded data form the functional environment on the M1 sequencer.

RAM Memory

The basic limitation you must work under with the M1 (as well as all sequencers) is available RAM memory, or how much data the machine can hold. The M1, which is a synthesizer as well as a sequencer, must divide its entire memory capacity between sound program storage and sequencer data storage. Due to the M1's affordable price, the memory installed is not limitless and so, must be considered when working with the sequencer. The percentage of remaining memory is always shown in the upper right-hand corner of the main Record/Play display.

You can choose to divide the memory in two ways, giving the greater amount to either the sequencer or the synthesizer. We'll discuss the details of this choice in Chapter 4, Data Management, but either way, *the amount of total memory assigned to the sequencer is the absolute ceiling you work with.*

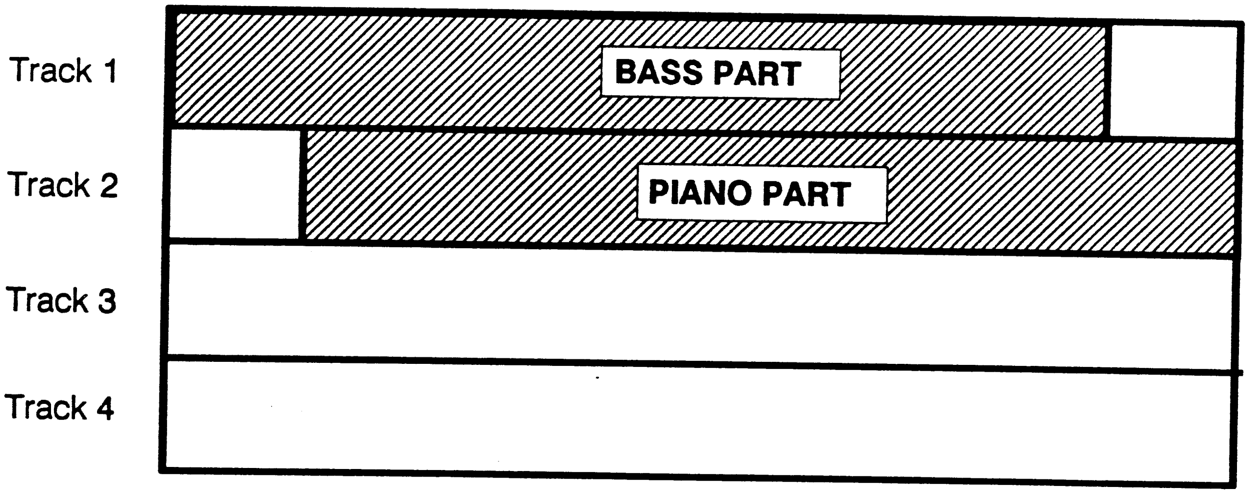
The M1 sequencer can hold up to 10 Songs in its memory, but if a lot of RAM is used on one Song by arranging a thickly scored piece, you might only have the memory capacity for that song alone. Although the data in RAM memory can be copied to an external data card, this doesn't expand the internal memory capacity beyond its defined limits.

Songs and Patterns

On the M1, a finished piece of music is called a Song. Songs contain up to eight tracks of performance data and have a maximum length of 250 bars. There are storage locations for 10 Songs (0 - 9) but, as mentioned above, a limited RAM memory might restrict the actual number of Songs that can be held in the machine at any one time.

The M1 sequencer uses both Song record and Pattern record formats.

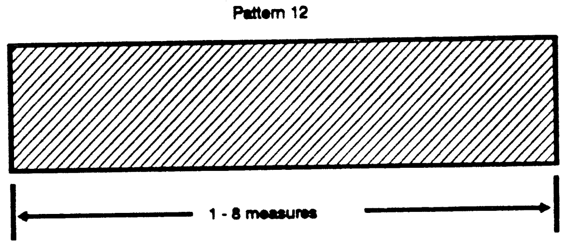
Song Record - Song Record approaches a piece of music as a whole. Data is recorded continuously from beginning to end directly onto one of the eight tracks.



After the performance is recorded, data can be manipulated in a variety of ways using the many edit functions.

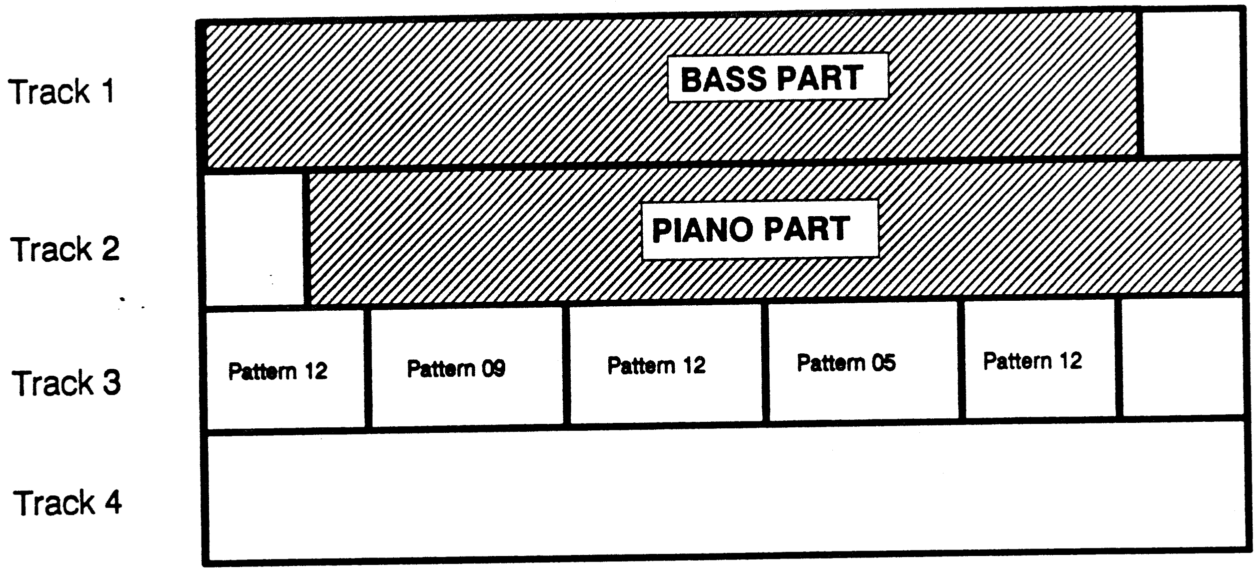
Pattern Record - Pattern Record allows the user to record a small section of music (up to a maximum length of eight bars) into one of the 100 Pattern memories. After a pattern is recorded, it's inserted into a track and connected with other patterns to form a complete performance. A single Pattern can be used over and over again without consuming a lot of valuable memory space. This is because pattern data isn't duplicated onto the track. Instead, just the pattern number is inserted at the proper measure and the sequencer calls up that number, like a DJ playing the same record more than once.

Performance Data is recorded into the Pattern location...


Pattern 12
1 - 8 measures

....and then the pattern number is inserted into the track.

Patterns are only one track wide, meaning you cannot layer more than one sound program.


Track 1
Track 2
Track 3
Track 4
BASS PART
PIANO PART
Pattern 12
Pattern 09
Pattern 12
Pattern 05
Pattern 12

Methods of Input

In both Song Record and Pattern Record, performance data can be input in two ways:

Real Time - As you play it.

Step Time - Notes and rests are punched in, one step at a time.

Chapter 4

Data Management

This chapter is meant to be used as a reference whenever you need to transfer data to and from the M1 sequencer. The operational procedures are organized so you can find what you need quickly and easily.

Sequencer data can be stored to one of three mediums:

- **A Data Card** - Using Korg's MCR - 03 RAM card.
- **A Computer** - Using System Exclusive software program.
- **Another Sequencer** - Playing the data in real time from the M1.

All Sequencer data is transferred without affecting the sound program memory.

Memory Allocation

The Internal memory of the M1 can be allocated in one of two ways, giving the greater portion to the sequencer (more performance memory) or the greater portion to the synthesizer (more program memory).

Large Sequence Allocation = When the greater amount of available memory space is allocated to the sequencer, a total of 7,700 steps (MIDI events) can be recorded and stored. This limits the number of sound programs to 50 and combination programs to 50, so program numbers I50 to I99 cannot be selected.

Large Program Allocation = When the memory is allocated in favor of program data, a total of 100 sound programs and 100 combination programs is addressable. This limits the sequencer to just under 4,400 steps (MIDI events).

The machine is shipped from the factory with a greater amount of program memory.

Change the Internal Memory Allocation

If you're planning to record a thick arrangement, allocate the memory in favor of the sequencer -- but be careful, because switching the allocation setting destroys all program data located in I50 - I99. Switching the allocation back to favor the synthesizer does not restore the lost data, so if you're planning to make a switch, save all program data to the external RAM card first.

To Switch Internal Memory Allocation:

1. Save all data you want to keep to the external card before proceeding (see Save to Data Card, this chapter).

2. Press the [Global] button.

3. Use the [Page] buttons to access the Memory Allocation page (Function 6 - Page 4). To rapidly access this page, press [6] on the Ten Key Pad and then press the [Page +] button three times.

4. Change the allocation value with the [Up/Down] arrow keys:

   Large program memory = (100Prog/100Combi/4400Seq)
   Large sequence memory = (50Prog/50Combi/7700Seq)

5. Press the cursor button below [Exec].

6. At the prompt, select [Yes] to execute the change or press [No] to cancel.

The Data Card

Transferring data to and from a memory card is the quickest, most convenient method to use. Data cards are small and easily stored and don't require any additional hardware to work. Collecting a number of them can be expensive, but even if you're using a computer to store the lion's share of your data, having a few on hand for easy access is recommended.

Use only the Korg MCR - 03 RAM card. No other RAM memory card is compatible with your M1.

Memory Card Format

Before data can be saved to a new MCR - 03 card, it must be formatted to the M1 operating system. This is also true if the memory card has been used to store data from another Korg product. Cards already containing M1 data don't need to be reformatted before storing new data, unless you want to reconfigure the memory allocation. The memory card can be formatted to one of three memory allocation setups.

- **As a Program Card** - When the memory card is formatted as a program card it can hold 100 sound programs and 100 combination programs.
- **As a Sequencer Card** - When formatted as a sequencer card it can hold just under 7,700 steps of sequencer data.
- **As a Program/Sequencer Card** - In this format the card holds 50 sound programs, 50 combination programs and just under 4,200 steps of sequencer data.

NOTE: Two RAM cards are necessary to store a full bank of internal memory.

To Format the MCR - 03 RAM memory card:

1. Press the [Global] button.

2. Access the Format Card page (Function 9/Page 2) by pressing [9] on the Ten Key Pad and then press the [Page +] key once.

3. Select the memory allocation configuration:

Program Card - (100Prog/100Combi)

Sequencer Card - (7700Step Seq)

Program/Sequencer Card - (50Prog/50Combi/4200Seq)

4. Press the cursor key below [Format].

5. At the prompt, select [Yes] to format the card and [No] to cancel.

NOTE: This procedure erases all data now on the card. If you're switching memory allocations, make sure you save any important data to the Internal memory before you reformat the card.

Bulk Data Save to Card

Using this procedure, you can transfer a block of internal memory to the card. The type of data you save depends on how the memory card has been formatted. In other words, you can't save any program data to a card that's been formatted as a sequencer card.

To Bulk Data Save to Card:

Data can be saved to formatted cards only. If you plan to use a new card, format it before saving (see Format Card above).

1. Set the Protect switch located on top of the data card to the OFF position. Insert the data card into the card slot.

2. Press the [Global] button.

3. Access the Save to Card Page (Function 9/Page 1) by pressing [9] on the Ten Key Pad.

4. Select the data type you want to save according to how the card is formatted.

(Prog/Combi) - 100 sound programs and 100 combination programs

(Sequence) - 7,700 steps of sequencer data

(Prog/Combi/Seq) - 50 sound programs, 50 combination programs and 4,200 steps of sequencer data

5. Press the cursor key below [Save].

6. At the prompt select [Yes] to engage the transfer or [No] to cancel.

If you receive an *ERROR* message, see an explanation for all error messages at the end of this chapter.

7. Set the Protect switch on the data card back to the ON position before stowing the card.

Bulk Load from Card

Although Songs can be selected and played from the card itself, the recording and editing functions address only data in the internal memory. If you want to make any changes to sequence data stored on the card, you must transfer it to the internal memory first, using the following procedure or the Exchange Sequences function (see below).

The type of data you load depends on how the internal memory has been allocated. You can't load a full sequencer card (7,700 steps of data) to the internal memory if the sequencer is allocated only 4,400 steps.

NOTE: This procedure replaces internal memory data with new data from the card. Make sure you save any important data in the internal memory to another card before loading.

To Bulk Data Load from the Card:

1. Press the [Global] button.

2. If you need to conform the Internal memory allocation to that on the card, then access the Memory Allocation Page and correspond the allocation values (see Allocating the Internal Memory above).

3. Access the Load from Card page (Function 8/Page 1) by pressing [8] on the Ten Key Pad.

4. Select the type of data you want to load:

(Prog/Combi) - All sound and combination programs. This applies when you're loading from Program Cards and Program/Seq Cards.

(Sequence) - All sequence data. This applies when you're loading Seq cards and Program/Seq cards.

(Prog/Combi/Seq) - All sound and combination programs and sequence data. This applies only when you're loading from Program/Seq cards.

5. Press the cursor key below [Load] on the display.

6. At the prompt, select [Yes] to engage the transfer or [No] to cancel.

If you receive an *ERROR* message, see an explanation for all error messages at the end of this chapter.

Exchange Sequences

Sequence data on the card cannot be edited unless it's transferred to the internal memory first. This means you must save the internal data to another card before loading any new data or it'll be lost. The exchange sequence function accomplishes both tasks in one step by exchanging the sequence data on the RAM card and that of the internal memory.

NOTE: This function cannot be performed when the data on the card exceeds the allocated capacity of the internal memory or vice versa.

To Exchange Sequence Data:

1. Press the [Seq] button.

2. Access the Exchange All Sequences Page (Function 9/Page 1) by pressing [9] on the Ten Key Pad.

3. Press the cursor below [Exec].

If you receive an *ERROR* message, see an explanation for all error messages at the end of this chapter.

Load One Song

A single Song can be loaded from the data card to the internal memory.

NOTE: If the Song to be loaded from the card has Patterns to be loaded also, load the Patterns before the Song.

To Load One Song:

1. Press the [Seq] button.
2. Access the Load 1 Song Page (Function 9/Page 2).
3. Select the Song number on the card you want to load using the [Up/Down] buttons.
4. Place the cursor below the Internal Song number value using the cursor keys.
5. Select the Internal Song location you want the data loaded to. If there is already sequence data in that location, it'll be replaced by the new data.
6. Select [Exec].

If you receive an *ERROR* message, see an explanation for all error messages at the end of this chapter.

Load One Pattern

Individual Patterns can be loaded from the card to the internal memory. This can be particularly useful in managing drum beat patterns.

To Load One Pattern:

1. Press the [Seq] button.
2. Access the Load 1 Pattern Page (Function 9/Page 3).
3. Select the pattern number to be loaded from the card using the [Up/Down] buttons.
4. Press cursor key [F] and select the destination pattern number in the internal memory.

NOTE: If the internal pattern number already contains data, it will be replaced by the card data unless it's being used in a Song. If the selected destination pattern number is now being used in a Song, loading can't be executed and you must select another destination number.

5. Select [Exec].

6. If the time signature or length of the destination pattern differs from the source pattern you're attempting to load, the display asks you if you want to replace the data now in the destination location. At the prompt, select [Yes] to engage the load or [No] to cancel. If the destination pattern is used in a Song, the measures where it appeared are erased in that Song.

If you receive an *ERROR* message, see the Error Message section at the end of this chapter.

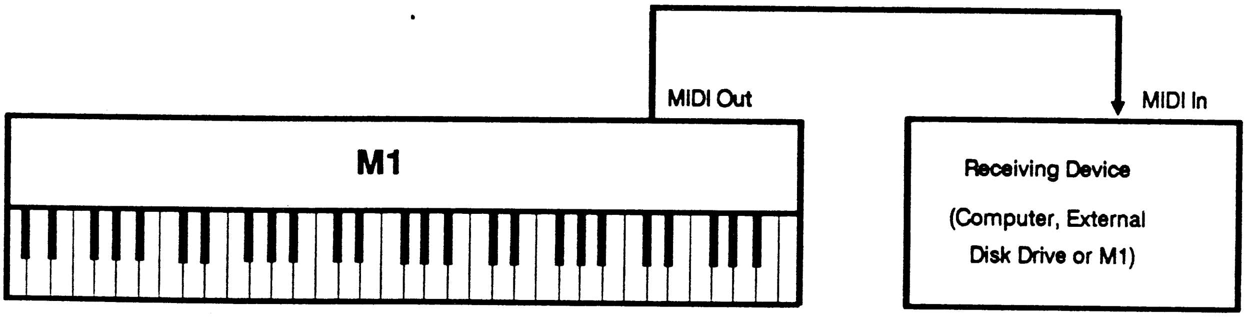
MIDI Dump

All Internal Data can be transferred to another M1 or to a computer when using a compatible system-exclusive software program. Using a computer is the most economical method for storing M1 data because several files can be kept on a single floppy disk. In addition, a single system exclusive program can be compatible with many different types of MIDI instruments. There are several system exclusive programs on the market so consult your Korg dealer for the best choice to meet your needs.

Dedicated sequencers like the Korg SQD-8 and external data filers like the Yamaha MDF-1 can also be used as storage mediums for MIDI data dump, providing they can save system exclusive data. Determine whether your selected storage medium can handle the memory requirements necessary for the dump. Consult the chart on page 94 of your M1 owner's manual for a listing of data types and approximate storage requirements.

Saving Data through MIDI

First you must set up your machines:



1. If you're transferring data to another M1, the receiving machine must have the Memory Protect Page that applies to the data type you want to load set to OFF:

   Program Memory (Function 6/Page 1)
   Combination Memory (Function 6/Page 2)
   Sequencer Memory (Function 6/Page 3)

The receiving M1 must have System Exclusive Enabled:

MIDI Filtering Page (Function 5/Page 2)

- If you're transferring to a computer, consult you software program manual for setup procedure to accept a MIDI data dump.

2. On your transmitting M1, press the [Global] button.

3. Access the MIDI Data Dump page (Function 7/Page 1).

4. Select the data type you want to save:

   - **Program** - Transmits all sound programs
   - **Combination** - Transmits all combination programs
   - **Global** - Transmits global data (Function 0/Page 1 - Function 5/Page 2)
   - **SEQ Data** - Transmits all Sequence data
   - **All Data** - Transmits all the above data.

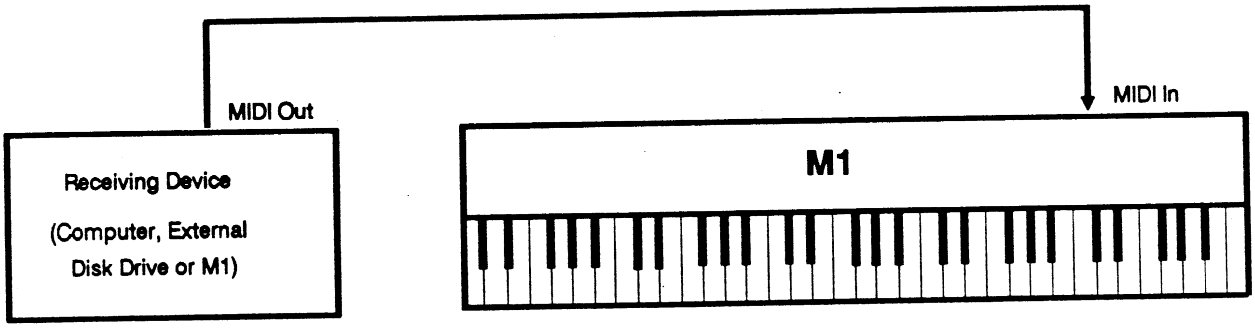
5. Select [Dump] by pressing the [G] cursor key.

If you receive an *ERROR* message, see the Error Message section at the end of this chapter.

Loading Data through MIDI

Set up your machines this way:

See example on next page.



1. Load the data from disk into the RAM memory of your storage device (computer, dedicated sequencer, etc.)

2. On your receiving M1, press the [Global] button and select the Memory Protect Page that applies to the data type you want to load:

   Program Memory (Function 6/Page 1)
   Combination Memory (Function 6/Page 2)
   Sequencer Memory (Function 6/Page 3)

3. Set the Internal value to OFF.

4. Select the MIDI Filtering Page (Function 5/Page 2) and turn System Exclusive (EXCL) to Enable.

5. Begin transmitting data to your M1. When the transference is complete, the display tells you.

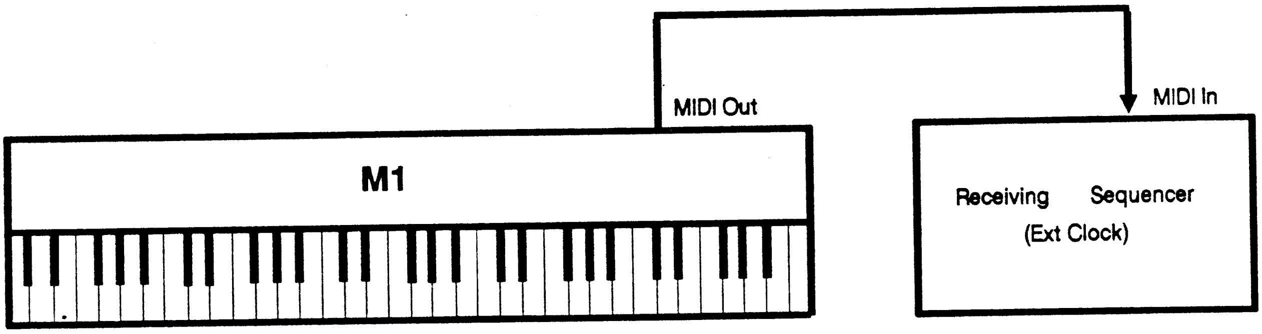
Transferring Data to Another Sequencer

The MIDI Data Dump function stores sequences as system-exclusive data onto a variety of storage devices, but the data can be received back *only by an M1.* There might be an occasion where you'll want to transfer your sequence data to another sequencer. If you tried to load a MIDI Data Dump file into another sequencer, you wouldn't have any luck; the machine cannot accept system-exclusive data from another make and model device. Only another M1 can respond to an M1 system-exclusive data file.

If you want to transfer sequence data to another sequencer from your M1 or vice versa, it can be done in real time -- as it plays.

Transferring Data from the M1

Set up your machines this way:



1. Prepare the receiving sequencer to accept a MIDI Clock.
2. Put the receiving sequencer into the record mode.
3. On the transmitting M1, press the [Seq] button.
4. Select the Song you want to transfer.
5. By pressing [Start/Stop] at this point, all the Song data is recorded onto one track of the receiving sequencer.

If you want to transfer each track of data on the M1 to a separate track on the receiving sequencer:

M1 Display

Song 0	**Track**	**Status**	**Track 1**
On Off	**On Off**	**On Off**	**On Off**

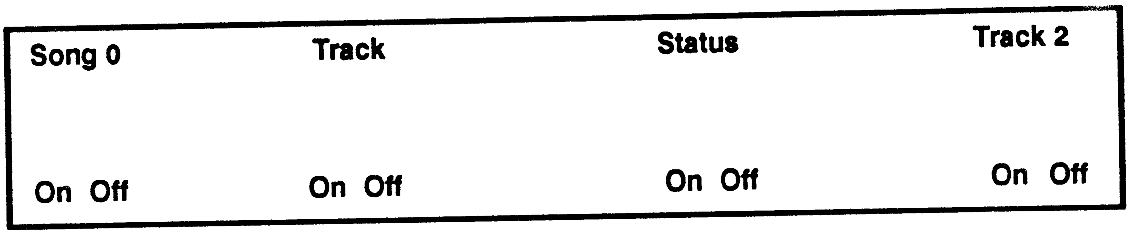
a) After selecting a record track on the receiving sequencer, mute all M1 tracks except one by selecting the Track Status Page (Function 1/Page 3) and turning all but one track to OFF.

b) Press [Start/Stop] and the active track's data is played onto the record track of the receiving sequencer.

c) Press [Start/Stop] and both machines stop.

d) Select the Track Status Page again, mute the now active track, and turn another track ON.

M1 Display



Song 0	Track	Status	Track 2
On Off	On Off	On Off	On Off

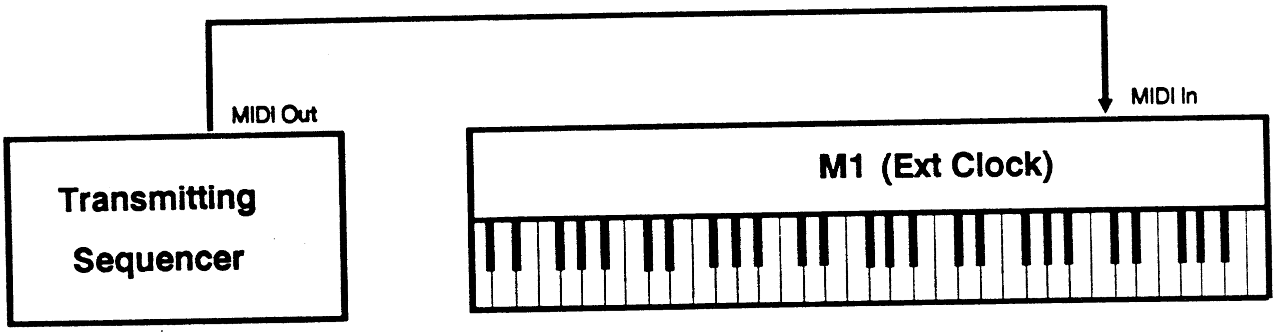
e) Select another record track on the receiving sequencer and put the machine into record ready.

f) Press [Start/Stop] on the M1 and the new active track is played onto the new record track of the receiving sequencer.

Continue in the same manner until all tracks are recorded.

Receiving Data from Another Sequencer

Connect the machines this way:



Prepare the transmitting sequencer first:

1. Set it to transmit a MIDI Clock. Many machines do this automatically, but some require that you turn this function ON. Check your owner's manual.

2. Call up the song you want to record onto the M1.

Keep this in mind: The M1 sequencer memory capacity is limited to 4,400 MIDI events (22K bytes) when set to Large Program Allocation and 7,700 events (37K bytes) when set to Large Sequence Allocation. If there is sequence data already in the M1, the capacity is even smaller. If the song being transferred requires more memory than available, the M1 stops recording when it fills up, from wherever it is in the process.

Prepare the M1:

The M1 can record on all eight tracks simultaneously.

1. Press the [Global] button and select the MIDI Global Page (Function 5/Page 1).

2. Select the Clock parameter by pressing the [D] cursor key and set the value to EXT (External) using the [Up] key. In this mode the sequencer receives its tempo clock from the transmitting sequencer.

3. Press the [Seq] button. You'll see *MIDI* in place of the tempo value, indicating the M1 is set to receive a MIDI clock.

4. Select the Track number by pressing the [C] cursor button. Set the value to MLT. This sets the M1 to Multi-Channel recording.

5. Select the Multi Channel Recording Page (Function 0/Page 3).

6. Select the tracks you want to record on by setting their values to REC. All others should be set to PLAY.

7. Select the MIDI Channel Page (Function 1/Page 4) and set each track to a different channel number. Each track records incoming data on its assigned channel only, so the channel assignments in the M1 should correspond with the track channel assignments on the transmitting sequencer.

8. Press [REC] and you return to the main Record/Play screen. The Record button is lit to show record ready.

9. Press [Start/Stop]. The cursor moves to the tempo field of the display, now showing *MIDI*. The M1 waits for a MIDI clock message from the transmitting sequencer.

10. Start the transmitting sequencer and the M1 starts as well.

11. When the recording is completed, stop the transmitting sequencer and the M1 follows. Press the [Global] button, access the MIDI Global Page (Function 5/Page 1), and set the CLOCK value back to INT.

12. Press the [Seq] button, and now you can play back and edit the newly recorded data.

Error Messages

- **Battery Low (Internal)** - When the M1 is turned off, the internal memory remains intact on battery power. The battery is good up to five years and should only be replaced when you receive this message. Take the M1 to an authorized Korg service center for replacement.
- **Battery Low (Card)** - When you receive this message, transfer all data from the card to the internal memory and then replace the battery. All data on the card is lost when the battery is removed. You can buy replacement data card batteries at your Korg dealer.
- **Card Format Mismatch** - Format the card
- **Card Memory Full** - The amount of data to be saved from the internal memory exceeds the space allocated on the card. Reformat the card to 7,700 steps.
- **Invalid Card** - The card might be unformatted or completely full. Check to see if there is any valuable data stored on the card and then format the card.
- **Memory Protect** - The Card memory is protected from inside the M1. Select the Memory Protect Page that applies to the data you're transferring and turn the Card or Internal protect OFF.

Program Memory Protect(Function 6/Page 1)
Combination Memory Protect (Function 6/Page 2)
Sequencer Memory Protect (Function 6/Page 1)

- **No Card Inserted** - Fully insert the card.
- **ROM Card or Protected Card** - Data cannot be saved to ROM cards; they're permanently protected. On a RAM card, the protect switch located at the top of the card must be set to the Off position before data can be saved.

Section Summary

Section 1 introduced you to several fundamental concepts regarding MIDI and the M1. The preceding discussion is actually a foundation of information for experiments and applications to follow in Sections 2 and 3. Use this introductory section as a reference for basics review and particularly Data Management issues.

Section 2 starts you working with the primary recording, playback and editing functions of the sequencer. The tutorials you'll find throughout the section demonstrate the functions being described in a practical manner. Take the time to work through them to gain as much as possible from this book.

Section 2

The owner's manual included with your M1 is organized under the hierarchy of menus and submenus. This is necessary so you can find something quickly when you use the document as a reference. In contrast, this book is organized according to function because many related parameters are often found located on several different menu pages. This book addresses a particular function by including all related parameters under the function heading, regardless of what page they're located on.

Use the following chapters to learn and inspire ideas -- ideas that otherwise go unattended because the full extent of the machine's ability is not known. After you've gone through the text and worked out the exercises, you'll have a sense of fluency with the M1 sequencer and can use it as an extension of your own musical thought.

Chapter 5

Playback

Playing back recorded data might seem like a simple issue hardly worth the attention of a whole chapter, yet included here are a number of details relating to basic playback. We begin with organization matters, how to select a song and set up the chain play function. Then I'll introduce a few editing parameters.

There are basically two kinds of editing you can perform on the M1: changing the track parameters and actually altering the recorded data itself. This chapter deals with the former type, by discussing editing functions that don't leave the data permanently changed.

Basic Playback

Basic playback concerns simple song selection and fast-forward/rewind control.

Song Select

You can select recorded songs from both the internal memory and the external memory on data card when a card is inserted into the card slot.

NOTE: The M1 sends and receives MIDI Clock plus a Song select command. This means any device synced to M1 starts, stops and follows tempo commands from M1. Similarly, M1 follows the same commands from a controller device when it's set to receive an External Clock (see Chapter 15, Syncing & Rhythm).

To Select A Song For Playback:

1. Press the [Seq] button to enter Sequencer Mode. The main Record/Play display of Song 0 in the internal memory is shown on the screen. The first demonstration sequence in the current revision is called *Oh Yes!1*.

2. Press [Start/Stop] to hear the currently selected Song.

If you're listening to the demonstration material, Song 1 (Out There) begins playing as soon as Oh Yes!1 is finished and then subsequent songs follow. This exhibits the Chain Play function covered later in this chapter.

3. To select a particular Song, the sequencer must be stopped. You can't select a song while the machine is in play. Move the cursor to the Song Number field by pressing the [B] cursor button.

4. Use the [Up/Down] arrow buttons to select a song number and then press [Start/Stop] for playback.

5. If you press [Start/Stop] before play is finished, the M1 stops at the current measure number. If you press [Start/Stop] again, M1 starts from where it left off. To return to measure 1 select RESET [> <] on the display.

To Select A Song From The Data Card:

6. Press the [Card] button and then select song numbers in the usual manner.

NOTE: You can't select any of the other Page displays while M1 is in play. Tempo, Program and Volume can be changed during play (see Parameter Edit below).

Playback From The Middle Of The Piece

You can select any measure number within song and begin playback from that bar.

NOTE: M1 sends Song Position Pointer (SPP), so any MIDI device synced to M1 which is similarly equipped with SPP begins at the selected measure number. Likewise, M1 receives SPP commands from a controller device (see Chapter 15, Syncing & Rhythm).

1. After selecting the Song number, place the cursor below the measure number field on the display by pressing the [D] cursor key.

2. Select the measure number with the [Up/Down] keys, or the Data Slider.

3. Press [Start/Stop] and M1 starts from the currently displayed bar. To return to measure 1, select RESET [> <] on the display.

Chain Play

One the most useful and important features of the M1 sequencer is the Chain Play function. Chain Play lets you program a playlist where songs are called up and played automatically. This function, although viewed by many as a necessity, is often omitted from sequencing systems because its primary use is in live performance situations, not in the studio.

Chain Play can be used effectively if you perform all your recording on another sequencing system in your studio and use the M1 for live gigs. By loading all the data into the M1 before the performance, and then organizing the songs by your set list, the M1 can serve as an ideal road sequence player.

The sequencer calls up Songs located in both internal and data card memory.

To Program A Playlist:

1. Select the Song you want to come first on your playlist. It can be any Song number in the internal or data card memory; it doesn't have to be Song 0.

2. Select the Song Parameter Page (Function 3/Page 1).

3. Select the *Next* parameter with the cursor keys.

4. Use the [Up/Down] keys to select the Song number you want to follow next. It can be any song number in the internal or data card memory.
5. Return to the main Record/Play display and then select the second song on the list (the same number you just selected for *Next*).
6. Repeat steps 2 - 5 until you've organized all the songs on your playlist.
7. Select the first Song again and press [Start/Stop]. When the first song is completely finished, there's a slight pause and then the next song begins automatically.

NOTE: If there's a long pause between songs, this means the previous song contains a number of empty measures at its end. Empty measures are recorded whenever you leave the sequencer running past the last performance event. Solve this problem by deleting all the empty bars following the actual ending of the music (see Delete - Chapter 8, Advanced Editing).

Helpful Tips

Extended Playlists

Since the M1 memory is relatively limited, you most likely won't fit an entire set's worth of music in the internal memory. You can use a data card to double the memory capacity, yet even this might not be enough. An option can be to spread the data throughout a few data cards, but since only one card can be active at once, this presents a problem.

Get around this dilemma by replacing cards while the M1 plays an internal memory song.

Begin the set with a song on the data card, and program Chain Play to play through all others on the card before calling up the first one in the internal memory.

1. Card #1/Song 0
2. Card #1/Song 1
3. Card #1/Song 2
4. Internal/Song 0 (replace card)

Then while the internal song plays, replace the card with a fresh one. Program Chain Play to call up all the songs stored on the new card next, and when they're through, call up the second song from the internal memory.

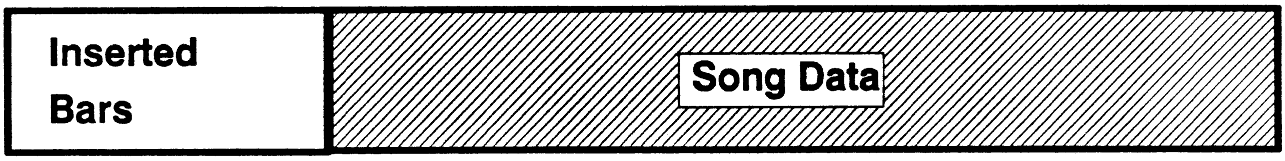
5. Card #2/Song 0
6. Card #2/Song 1
7. Card #2/Song 2
8. Internal/Song 1 (replace card)

Continue in this manner and you should be able to accumulate a sizable playlist.

Timed Pauses Between Songs

You can arrange timed pauses between songs by inserting empty measures at the top of songs, before the music begins.

I recommend inserting the empty bars at the beginning of songs because you have the option of stopping the sequencer *after the Song change has been made* and then starting it again. This works much more reliably than stopping play during empty bars at *the end of the previous song* (see Chapter 8, Advanced Editing/Insert Measures).



Parameter Editing

The editing functions listed in this section are called *parameter editing* because the recorded data is not altered permanently. Editing functions discussed in subsequant chapters do change the data permanently. The changes covered in this chapter are all temporary and are forgotten when you select another song or power down the machine.

You can use these parameter editing functions as testing ground, to audition ideas that you can later make permanent.

Change The Tempo

The tempo setting can be changed at any time, while the sequencer is running or stopped.

To Temporarily Change the Tempo:

1. From the main Record/Play display, move the cursor to the Tempo field and use the [Up/Down] keys or the Data Slider to change the tempo setting.

This can be done before starting playback or while the machine is running.

2. Press RESET [> <] to return to the original programmed tempo.

To program a basic tempo see Chapter 6, Song Record-Real Time. To program tempo variations within a sequence, see Chapter 17, Additional Features.

Change The Sound Program

The performance data on a track can be played by any sound program in the internal memory or on the data card. You can select various sound programs for the Track number displayed from the main Record/Play screen during play or while the sequencer is stopped.

NOTE: Changing the Program parameter from the Record/Play screen sends a MIDI program change message on the channel assigned to the current track (the track shown on the display). Slave devices set to that channel respond to the command. Program number I00 = MIDI Program Change number 01 (see Chapter 12, Non-Note Data).

To Temporarily Change a Sound Program:

1. Select the Track Program Page (Function 1/Page 1). All eight tracks are displayed across the bottom of the screen. In the upper right corner is the program name for the currently selected track (underlined by the cursor).

2. Select sound programs from the Internal memory or from the data card. As you scroll through the choices, the program names appear in the upper right corner.

To Temporarily Change A Sound Program During Playback:

1. From the main Record/Play display, select the Track field with the cursor keys and choose the track number you want to address. You must do this while the sequencer is stopped.

2. Move the cursor to the sound program field by pressing the [F] cursor key.

3. Change the sound program with the [Up/Down] keys or the Data Slider. Press [Start/Stop] and change the program as many times as you like while the music plays. This is a great way to audition various sounds for the part recorded on the track.

    a) Pressing RESET [> <] returns the track to the original sound program.

    b) If you return to measure 1 manually (by selecting the measure field with the cursor and pulling the Data Slider all the way down), the sound program is left where you last set it. You can then select another track and change its sound program as well without losing the new selection you made on the previous track.

To permanently change the sound program, see Chapter 7, Basic Editing.

Change The Volume

Each track can be balanced against the other tracks in your arrangement, allowing you to accomplish a finished volume mix for each song. These settings can be made permanent, yet it's possible to temporarily change the volume setting for each track while the M1 sequencer plays, to audition different mix arrangements.

NOTE: Adjusting the Volume parameter from the Record/Play display sends a MIDI volume message (Control Number 07) on the channel assigned to the currently selected track. Slave devices responding to that channel respond to the volume change commands (see Chapter 12, Non-Note Data).

To Temporarily Change the Track Volume:

1. Select the Track Volume Page (Function 1/Page 2). The volume settings for all eight tracks are listed.

2. Select tracks and adjust the volume as necessary. The settings you make on this page are only temporary and don't become part of the song memory.

You can't perform this function while the sequencer is running.

To Temporarily Change Track Volume During Playback:

1. From the main Record/Display screen, select the Track number field with the cursor keys and choose the track number you want to address. This must be done while the sequencer is stopped.

2. Move the cursor to the Volume field by pressing the [G] cursor key.

3. Adjust the volume with the [Up/Down] keys or the Data Slider. Press [Start/Stop] and make adjustments while the music plays.

   a) Pressing RESET [> <] returns the track to the original volume setting.

   b) By returning to measure 1 manually (selecting the measure field with the cursor and pulling the Data Slider all the way down), the volume setting remains where you last set it. You can then select other tracks and change their volume settings to achieve a new balance mix without losing the settings you made on previous tracks.

To permanently change the volume setting, see Chapter 7, Basic Editing.

Mute Tracks

Each track can be muted individually so you can audition various arrangement ideas. Muting a track turns it off until you turn it back on again; when a track is muted, you can't hear it but *the recorded data remains unaltered.* To solo a track, you must mute all others.

You can mute tracks temporarily while the sequencer plays, but they're restored to normal when you press RESET [> <] or select another song.

To Temporarily Mute A Track:

1. On the Record/Play screen, select the track number field with the cursor keys, and then the number value.

2. Select the sound program field with the [F] cursor key and pull the Data slider all the way down. The field reads *OFF*, meaning the track is currently muted. This can be done during play.

3. If you want to mute other tracks, you can do so if you avoid pressing RESET [> <], or selecting another song. To return to measure 1, select the measure number field with cursor key [D] and pull the Data Slider all the way down.

4. To return the muted tracks to their original state, press RESET [> <].

Summary

All issues discussed in this chapter are those you can perform directly from the main Record/Play screen without selecting any of the other menu pages. This means all the edits covered above can be accomplished while the sequencer is in play.

Use these simple edits to audition ideas you might make permanent later on. You'll find each of them covered in depth later in this book.

Chapter 6

Song Record - Real Time

Real Time MIDI recording is quite simple once the preparations are made. In fact, it's exactly like recording into a tape machine; all you do is play.

This chapter deals mainly with preparing your recording environment, such as setting the time signature, the tempo, the metronome beat, and so on. Once the proper preliminary steps have been taken, the actual recording process is simple and quite hassle-free.

The following sections are organized in the order they should be approached as you prepare to make a recording in Real Time. You'll find a healthy amount of detail which takes you longer to read and digest than to actually implement. Once you've become familiar with the basic procedure and what it involves, the process takes just a few short minutes.

Basic Settings

The following parameters affect the song as a whole -- all tracks respond.

Initialize a Song

The first step is to initialize one of the ten songs.

The demonstration sequences that came with your M1 consume more than 90% of the available memory. Once you've listened to them they serve no useful purpose, so to create some headroom to record material of your own, these must be erased. Each song is erased individually by the initialize procedure.

When you initialize a song, you erase the recorded data and set all the parameters to their default values. In other words, you start from scratch. As part of the initialization, you set the song's time signature.

To Initialize A Song:

1. Select the Song you want to initialize.

2. Select the Song Initialize Page (Function 3/Page 1).

3. Set the Beat value (time signature):

2 = 2/4
3 = 3/4
4 = 4/4
5 = 5/4
6 = 6/4

The value you select determines the number of beats in a measure where the quarter note gets one beat.

NOTE: *Since the Beat value merely sets the number of beats in a bar, it doesn't actually determine a time signature per se, but rather a feel.* You can feel a Beat value of *6* as a 6/4 or a 6/8 time signature, for instance. In either case, the M1 views the quarter note as equal to one beat, but you, the user, can feel the beat value any way you like. Just remember, all quantize and step-time resolution values are based on the quarter note getting one beat.

Unfortunately, there's no Beat value of 7, so a 7/4 time signature is impossible.

NOTE: *Once the time signature is set, it can't be changed without reinitializing the song. Since this would erase all recorded data in the process, the time signature you select is the one you keep.*

4. After setting the Beat value, select [EXEC] on the display. If the song contains data, you'll be prompted, *Are You Sure?*.

5. Select [Yes] to initialize, [No] to cancel. Return to the Record/Play screen (Function 0/Page 1) by pressing [0] on the Ten Key Pad.

If you initialized Song 0 - demo sequence *Oh Yes!*, you'll see that 21% of the memory is now free. The song is now called *New Song* or, in effect, unnamed.

Twenty-one percent is still a rather limited amount of memory, so go ahead and initialize all the other demo sequences and you'll be ready to do some serious recording.

After you've initialized the song number you'll be working with, the next step is to set the basic tempo.

Program the Basic Tempo

The basic tempo for each song is programmable and, once set, becomes part of the sequence. Unlike the Beat value, the tempo can be reprogrammed at any time without affecting any of the recorded data, so if you decide on a different tempo after recording is finished, this is no problem. The default setting is 120 beats per minute (bpm).

The tempo can be changed repeatedly during the recording process from the Record/Play display from the tempo parameter on the main Record/Play display (see Chapter 5, Playback). The Basic Tempo is always restored whenever RESET [> <] is pressed or another song is selected.

To Program the Basic Tempo:

1. Select the Song number and then access the Song Parameter Page (Function 3/Page 1).

2. Select the Tempo field and choose a tempo setting between 40 and 208 bpm.

3. Return to the Record/Play display by pressing [0] on the Ten Key Pad.

NOTE: Changes in tempo can be recorded onto one of the eight tracks to create effective accelerando and ritardando (see Chapter 17, Additional Features).

Track Parameter Settings

Next, you set up track parameters. These settings affect selected tracks only. Each track has its own arrangement of parameter assignments.

If you already know just how many tracks you intend to use in a recording, you can set the track parameters for all the tracks at once. It's more common to address the tracks one at a time, however, as you progress through your recording. Either way, use the next four sections as a reference when you want to record new data onto a track.

Select a Record Track

The Record Track is selected on the main Record/Play display (Function 0/Page 1). Simply select the track field by pressing cursor key [C] and use the [Up/Down] keys to choose track number 1 - 8 or MLT (for multi-channel recording, see Chapter 4, Data Management).

NOTE: The M1 keyboard controls the selected Record Track only and not the track selected on the track parameter pages. If you want to test a particular parameter setting from the keyboard, return to the main Record/Play screen and select the track you're working with as the Record Track.

After selecting a Record Track, the next step is to set track status.

Set the Track Status

Every track can be assigned to:

- An internal sound program
- An external sound module
- Both internal and external
- OFF altogether (muted).

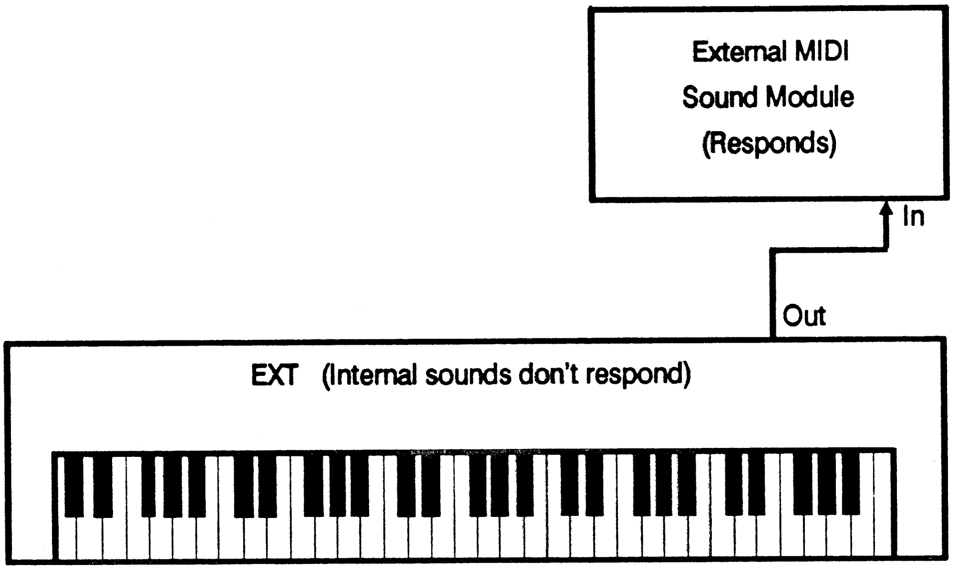
If you're using only the M1 and no other sound modules, the default setting (accessing both internal and external) works and you don't have to worry about the track status. If you're using external sound modules, you can decide to use either M1 sounds, those of your external MIDI device, or a layered combination of both.

To Set the Track Status:

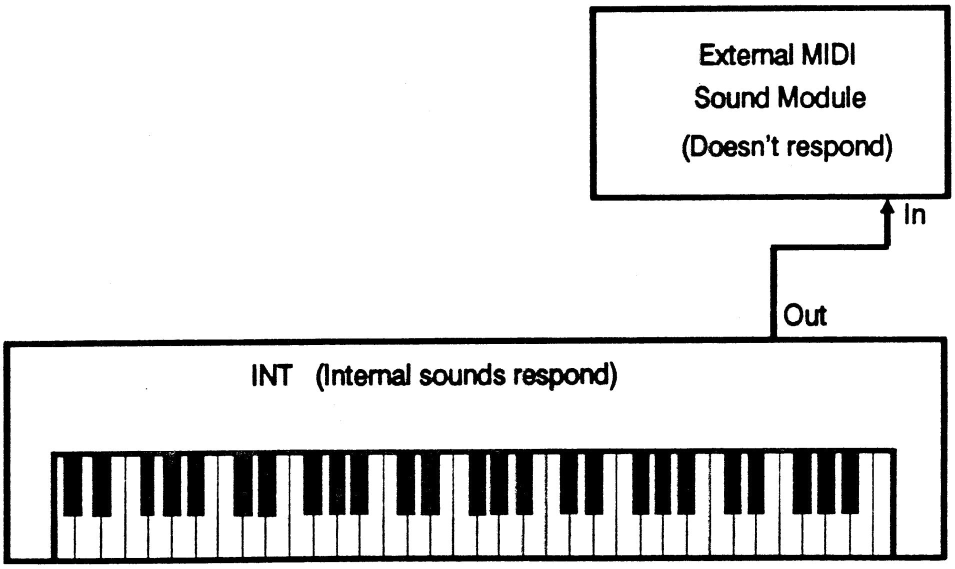
1. Select the Track Status Page (Function 1/Page 3). The status value for each track is listed across the bottom of the display. The default setting is ON. There are four modes:

OFF = The track is muted.

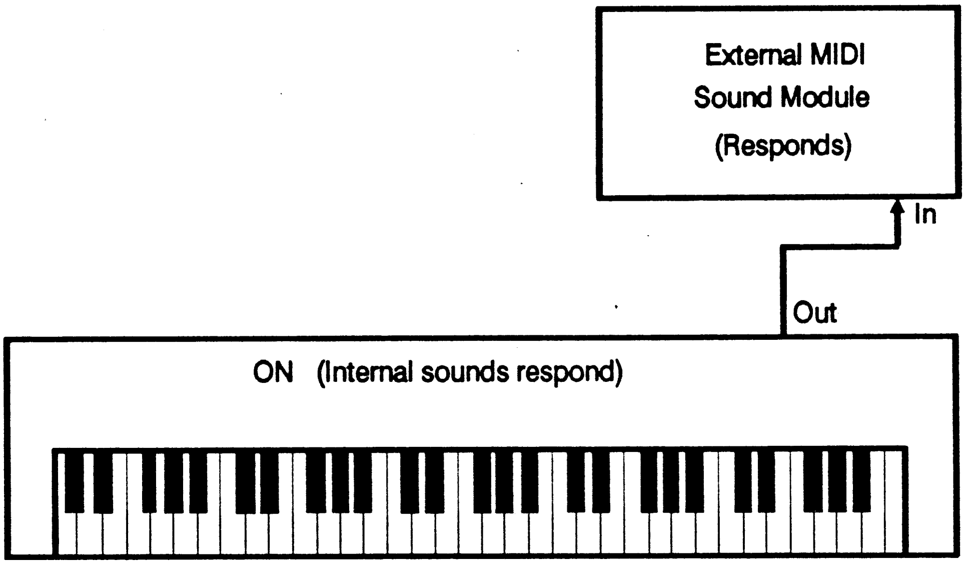
EXT = Track data is sent through MIDI OUT to a sound module, bypassing the M1 internal sound module.


External MIDI
Sound Module
(Responds)
In
Out
EXT (Internal sounds don't respond)

INT = Track data is sent to the M1 internal sounds only.


External MIDI
Sound Module
(Doesn't respond)
In
Out
INT (Internal sounds respond)

ON = Track data is sent both through MIDI OUT and to the internal sound module.



2. Select a track with the cursor keys.

3. Select the mode value and then test your setting from the keyboard.

- When set to EXT, the M1 keyboard controls only an external sound module, and the internal sounds won't respond on the selected track.
- When set to INT, the keyboard controls only the internal sounds, and any connected MIDI sound modules won't respond.

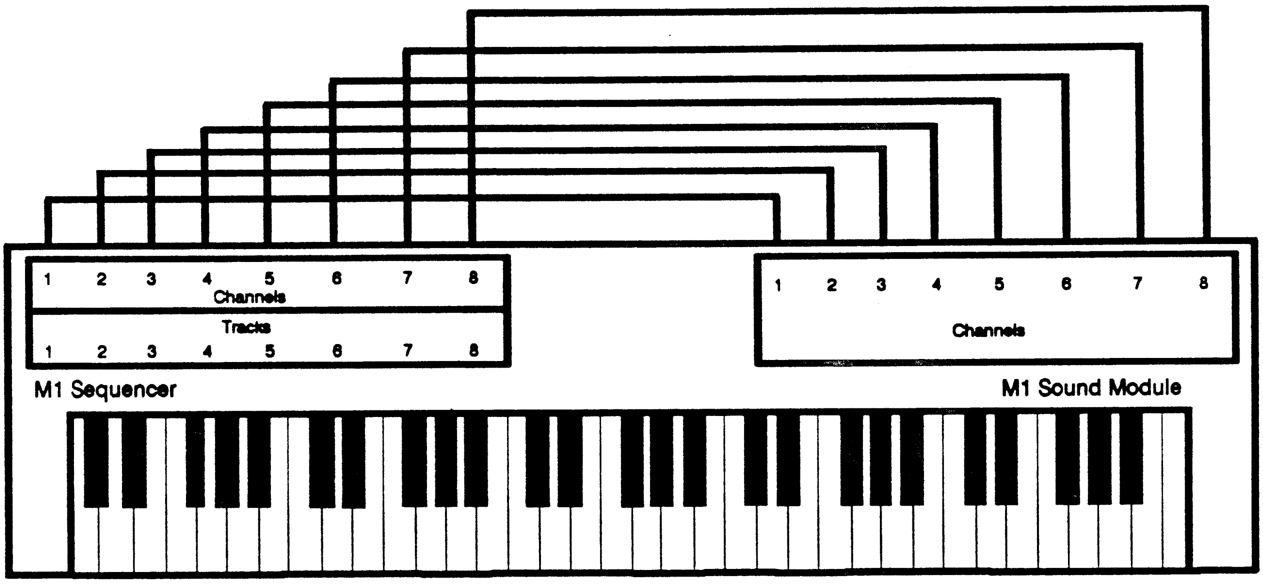
Remember, the M1 keyboard controls the selected Record Track only. If the track you're working with is other than the Record Track, return to the Record/Play display and select it as the Record Track.

The assignment you make is stored as part of the song memory. You can change the assignment at any time without affecting any other data.

Assign the MIDI Channel

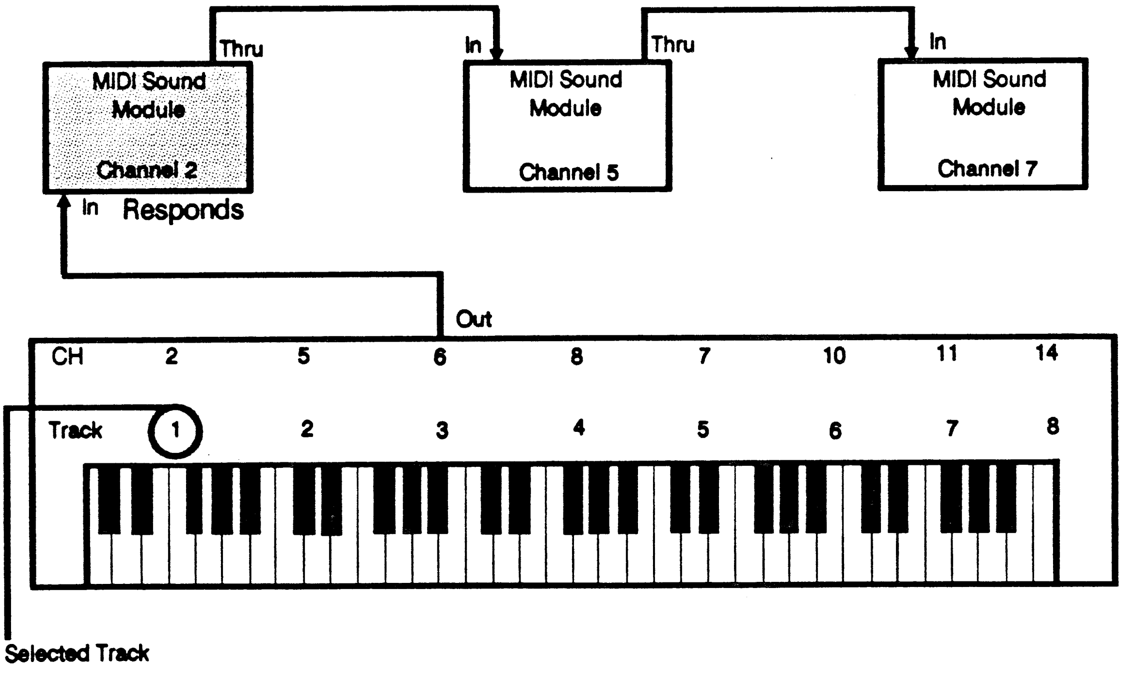
Each track can send a separate MIDI channel, thereby directing the track data to specific sound programs in M1 and to particular MIDI sound modules.

If you're working with M1 alone, remember that the multitimbral sound module portion of the workstation sees the sequencer portion as a separate machine. In effect, the M1 sequencer sends track data to the M1 sound module.



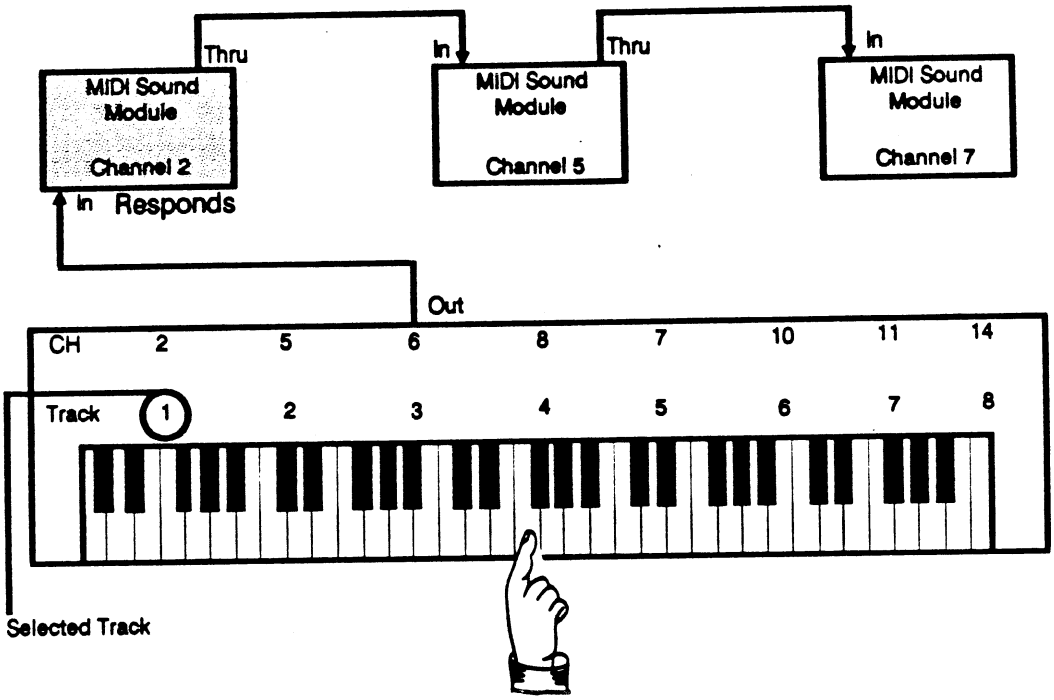
1 2 3 4 5 6 7 8
Channels
Tracks
1 2 3 4 5 6 7 8
M1 Sequencer
1 2 3 4 5 6 7 8
Channels
M1 Sound Module

If a track status is set to EXT or ON, external MIDI sound modules respond to recorded track data.

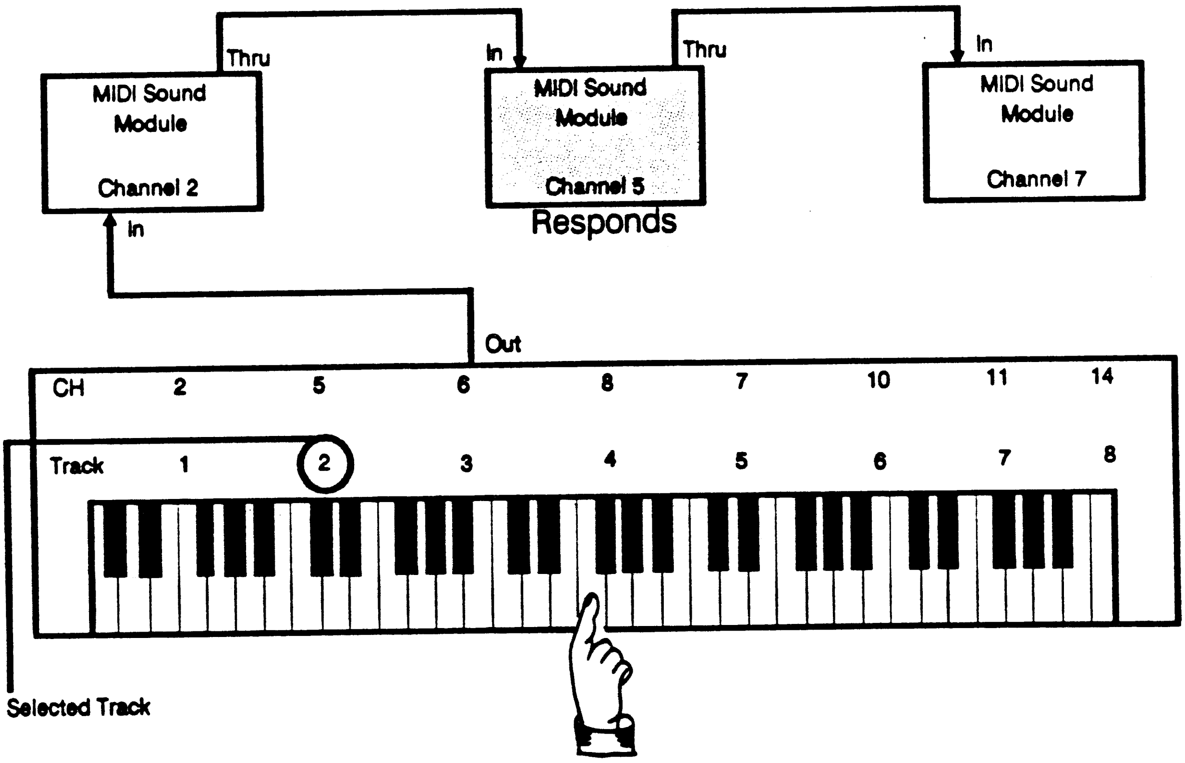


Thru
In
Thru
In
MIDI Sound Module Channel 2
MIDI Sound Module Channel 5
MIDI Sound Module Channel 7
In
Responds
Out
CH 2 5 6 8 7 10 11 14
Track 1 2 3 4 5 6 7 8
Selected Track

The M1 keyboard sends the MIDI channel corresponding to the selected Record Track. When you select Track 1 on the main Record/Play display, the keyboard sends data on the channel assigned to Track 1.


Thru
In
MIDI Sound Module
Channel 2
In
Responds
MIDI Sound Module
Channel 5
Thru
In
MIDI Sound Module
Channel 7
Out
CH 2 5 6 8 7 10 11 14
Track 1 2 3 4 5 6 7 8
Selected Track

If you select Track 2, the keyboard sends data on Track 2's channel.


Thru
In
MIDI Sound Module
Channel 2
In
MIDI Sound Module
Channel 5
Responds
Thru
In
MIDI Sound Module
Channel 7
Out
CH 2 5 6 8 7 10 11 14
Track 1 2 3 4 5 6 7 8
Selected Track

There are occasions where you may want to assign the same channel to two tracks:

- When you want two sound programs to play the same part, in layer fashion. Since it's impossible to assign two sound programs to one track, the only way to accomplish a layered effect like this (when using only the M1 and no external sound modules) is to assign two tracks to the same MIDI channel and then assign a different sound program to each track.

Track 1	**CH 1**	**Program I00**	**Performance Data**
Track 2	**CH 1**	**Program I30**	**No Data**

One track contains performance data, the other doesn't.

- When you want to input non-note data separately onto another track. For instance, you can record a note performance onto one track and then record volume changes on another (see Chapter 12, Non-Note Data).

Track 1	**CH 1**	**Program I00**	**Note Data**
Track 2	**CH 1**	**Off**	**Control Data**

Keep in mind, you need a separate MIDI channel for each part, or line of music in your arrangement. If you're recording a four-part texture such as Bass, Piano, Brass and Drums, you only need four separate MIDI channels to achieve it.

To Assign MIDI Channels:

When you initialize a song, the M1 automatically sets each track to a separate MIDI channel from 1 - 8.

1. Select the MIDI Channel Page (Function 1/Page 4). The MIDI channel assignments for each of the eight tracks are listed across the bottom of the screen. The *G* indicates the current Global channel sent and received by the M1 in Program Mode.

2. Select each track with the cursor keys and make your channel assignments.

3. If you're using external MIDI sound modules in your setup, test each channel assignment you make from the keyboard.

    - If a sound module is not multitimbral, it should respond to just one channel. If it responds to all channels indiscriminately, turn OMNI Mode to OFF inside that sound module.
    - If a sound module is multitimbral it can respond to several channels, playing a different sound with each channel.

The settings you make here become part of the song memory.

Select a Sound Program

Each track can be set to a different sound program, thereby allowing you to produce a full eight instrument arrangement with just the M1, and even more with additional MIDI sound modules. Each track can be set to *just one program;* you can't layer two or more programs onto one track.

Sound programs can be selected from the Record/Play screen or the Track Program Page to audition various combinations, but those selections are only temporary. To make a permanent selection that becomes part of the recorded data, you address the Track Parameter Page.

To Assign a Sound Program:

1. Select the Track Parameter Page (Function 4/Page 1). Several track parameters are displayed across the bottom of the screen.

2. Select the program parameter by pressing the [B] cursor key. The current program appears in the upper right corner of the display.

3. Select sound programs from the Internal memory or from the data card. As you scroll through the choices, the program names appear on the screen.

4. If you want a layered sound (track data played by two or more programs), you can accomplish this by assigning more than one track to the *same MIDI channel*, and then selecting different programs for each of those tracks.

NOTE: The M1 sends a corresponding MIDI program change number for every sound program you select. An external sound module responds by changing to its own sound program of the same number (see Chapter 12, Non-Note Data).

The selection you make on this page becomes part of the song memory.

Final Preparations

You're nearly ready to record. Yhese final steps turn the metronome on/off and set the record resolution value.

Metronome

You can choose to record with a metronome or without. If you turn the metronome on, you'll hear it whenever the sequencer is in motion, during both record and play modes. Hearing the metronome during playback is annoying in most cases, but in a live performance situation, the drummer often needs to hear the click to keep time with the recorded sequence. Unfortunately, the metronome click is part of the whole mix and can't be routed to a separate output, so if the drummer hears it, so does the audience.

To Turn On/Off the Metronome:

1. Select the Record Set Up Page (Function 0/Page 2).

2. Select the metronome field (MM) by pressing cursor [C].

Record Resolution Value

This parameter selects a resolution value that represents the smallest beat division possible while recording. It's actually a quantize feature that performs its function during the recording process instead of afterward as an edit.

This is similar to the way most drum machines work. On many drum machines, you can't record rhythm with notes faster than 16ths because the machine is permanently set to a 16th-note resolution value. This means a sixteenth note is the smallest beat division possible and the result is a recording that's perfectly in time, even if it wasn't played absolutely perfectly.

On the M1, you can select the resolution value. The range of values span from a quarter-note resolution, which means all notes played are moved to the nearest quarter note, to a high resolution, which doesn't change your playing performance at all. This value can be changed at any time, which means you can record one track with a high value and another with a lower value. For example, you may want to set the resolution value to 16th notes while recording a drum track, and then set it to a high value while recording the lead line.

The resolution value affects only the data as it's recorded. Data already recorded is unaffected.

NOTE: The value selected affects all MIDI data being recorded, including control data such as pitch bends, modulation and volume swells. Select the high resolution value when you record with these controllers.

To Set the Resolution Value:

1. Select the Record Set Up Page (Function 0/Page 2).

2. Select the resolution value from the choices below. The resolution value is represented in quarter-note fractions (♩/2 = 1/2 quarter note or an 8th note).

♩/48 = High resolution - no change to your performance.

♩/24 = 64th note triplets

♩/16 = 64th notes

♩/12 = 32nd note triplets

♩/8 = 32nd notes

♩/6 = 16th note triplets

♩/4 = 16th notes

♩/3 = 8th note triplets

♩/2 = 8th notes

♩/1 = Quarter notes

All notes played while recording are automatically moved to the nearest selected beat division.

Real Time Recording

Following the procedures above, you're ready to record. I'll lead off with a brief summary of the preparation steps.

Prep Summary

1. **Initialize a Song and select the beats per measure value** - Song Initialize Page (Function 3/Page 2).
2. **Set the Basic Tempo** - Song Parameter Page (Function 3/Page 1).
3. **Select a Record Track** - Record/Play Page (Function 0/Page 1).
4. **Set the track status** - Track Status Page (Function 1/Page 3).
5. **Set the track MIDI channel** - MIDI Channel Page (Function 0/Page 3).
6. **Select a sound program** - Track Program Page (Function 1/Page 1).
7. **Set the Metronome** - Record Set up Page (Function 0/Page 2).
8. **Select the Record Resolution Value** - Record Set Up Page (Function 0/Page 2).

9. Return to the main Record/Play display (Function 0/Page 1).

Recording

Recording is done in Record/Play Mode. When [R/P] is indicated in the lower left corner of the Record/Play display, the M1 is in Record/Play Mode. The alternate mode is Punch In/Out (see Chapter 7, Punch In & Basic Editing).

1. Press the [Rec] button and it lights. If the metronome is turned on you'll hear the click.

2. Set a comfortable recording tempo by selecting the tempo field on the display and adjusting the value up or down.

3. Confirm that the selected Record Track is the one you want and change it if necessary.

4. Press [Start/Stop] and *two things happen:*

   - The metronome produces a higher click on the first beat of the bar to indicate record mode.
   - You'll hear two bars of count-off before actual recording begins, as indicated by the measure number field, which is blank.

5. After the two-bar count-off, the measure field begins counting bar numbers. All that you play is recorded. If you don't play, empty measures are recorded.

6. When you've finished recording, press [Start/Stop] and you return to measure 1 automatically.

7. To listen back to what you recorded, simply press [Start/Stop].

If you don't want to hear the metronome beating during playback, you'll have to access the Record Set Up Page (Function 0/Page 2) and turn it off.

8. To record the track again, *repeat steps 1-6.*

NOTE: Recording over a track containing data erases all data on that track, even if you record over only a small portion of the old data. All old data is erased the moment the two-bar count-down is over. If you stop the sequencer during the count-down, the present data remains.

NOTE: You can't begin recording from the middle of the piece in regular Record/Play Mode. Pressing [Start/Stop] or [Rec] automatically returns you to measure 1. To record from a measure other than 1, use Punch In/Out (see Chapter 7).

9. After you're satisfied with your performance on the first track, select another Record Track. Set the status, MIDI channel and sound program for the new Record Track and set another resolution value if necessary. When you've made the preparations, record a second part.
10. You'll hear the first track play along as you record the second.
11. Continue adding tracks in the same manner.

Set Track Volume

You'll soon discover after recording a few tracks that some sound programs are louder than others. The volume mix between the tracks can be set as part of the song memory on the Track Volume Page.

Volume parameter values are sent as MIDI volume change commands. These commands are sent on the track's assigned MIDI channel. An external MIDI sound module receiving on that channel responds by getting louder or softer.

To Temporarily Audition the Volume Between Tracks:

1. Select the Track Volume Page (Function 1/Page 2). The volume settings for all eight tracks are listed.
2. Select tracks and adjust the volume as necessary. The settings you make on this page become part of the song memory.

You can't perform this function while the sequencer is running.

To Permanently Set the Track Volume Balance:

1. Select the Track Parameter Page (Function 4/Page 1).

2. Address the Volume field with cursor key [C].

The volume you set here becomes part of the song memory. It can be changed at any time.

Name the Song

After you've recorded some data, it's a good idea to label it.

To Name a Song:

1. Select the Song Parameter Page (Function 3/Page 1).

2. Select positions for the characters with the arrows [<], [>] on the display. Select characters with the Data Slider and the [Up/Down] keys.

3. Be creative.

Chapter Conclusion

This chapter covered all the preparatory steps needed to accomplish Real Time recording. Review the procedure a few times and you'll become very comfortable with it.

Now that you've gotten a little data into the machine, it's time to manipulate it a bit.

Chapter 7

Punch In & Basic Editing

Real Time recording onto a sequencer is not at all different from recording onto a tape machine. Basically what you play is what you hear played back to you, and that's what you end up with. That's not so bad if your performance was inspired and perfectly played. That happens all too seldom, unfortunately. But even if it was, maybe you'd like to change the key or have it play twice as long. With a tape recorder it's impossible to alter the performance once it's been laid down, short of re-recording it. Not so with the sequencer.

Punch In Recording

The Punch In method has been used for years in the recording industry as a method for re-recording a questionable part of a performance while saving the desirable portions. The mistakes are recorded over and the rest is left untouched. This is made effective because the performer is able to play along with the already recorded track to get the feel of the music; then, at the appropriate moment, recording begins, the mistakes are corrected and recording ends, all while the music plays continuously. What results is a smooth, flawless performance without any breaks or seams to give away the fact it wasn't all recorded at once.

The M1 performs Punch In and Out automatically to re-record a segment of measures within a track or to continue recording on the end of a track that's already been recorded.

NOTE: You can't use Punch In in Pattern Record Mode.

Set Up the Punch In Range

Punch In is performed automatically after you set the punch-in and -out measure points. Recording is done only between these two points even though the Song can be played back from any measure before the punch-in point.

You can't punch in or out in the middle of a measure.

To Select Punch In/Out Points:

1. Select the Record/Play screen (Function 0/Page 1).

2. Select the Mode field with the [A] cursor button and change the Mode to *P.IN.*

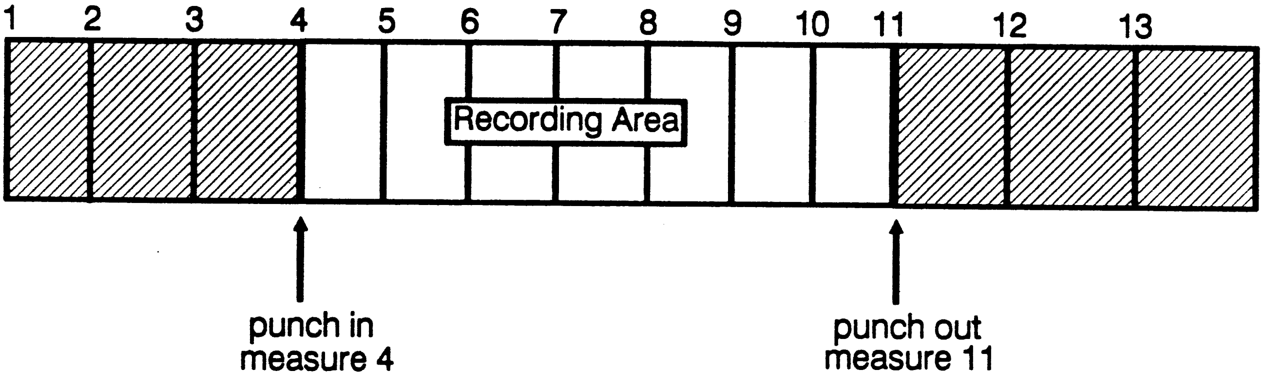
3. Select the Record Set Up Page (Function 0/Page 2). The Punch In and Out measure numbers are shown on the right side of the display.

4. Press the [F] cursor key and select the Punch In measure.

Recording begins at the beginning of the selected Punch In measure.

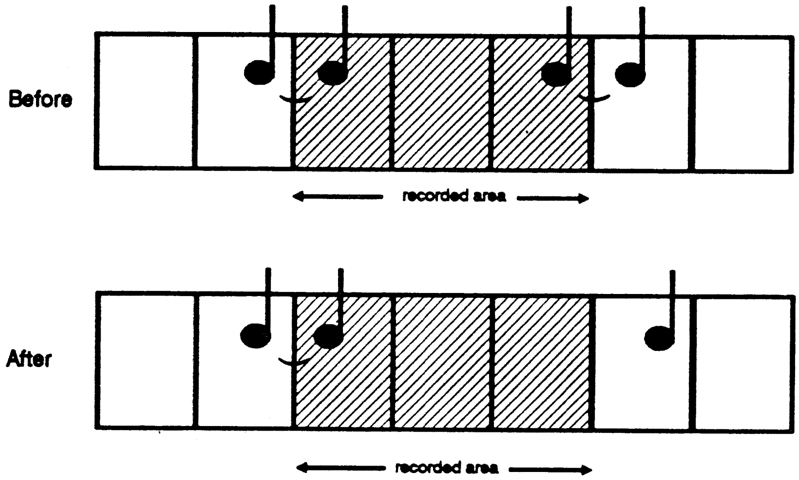
5. Press the [G] cursor key and select the Punch Out measure.

Recording ends at the beginning of the selected Punch Out measure.



NOTE: Notes tied across the Punch In measure are not erased, for one measure into the Punch In region only. If they're tied further than one measure, the subsequent data is erased. Notes that are tied from within the Punch in region are erased.

This diagram taken from the M1 owner's manual illustrates this:



Punch In Record

After setting the Punch In and Out points, you're ready to record new data with those points.

1. Return to the Record/Play display.
2. Select the measure number you want playback to begin on. Remember, recording doesn't begin until the punch-in measure is reached, regardless of where you set playback to begin. It's a good idea to set the sequencer to begin playback from a few measures ahead of the punch-in point so you can get the feel of the music before actual recording begins.
3. Press [Rec] and you'll hear the metronome click if it's turned on.
4. Press [Start/Stop] and you'll hear playback. Play along with the track if you want to get the feel for the music; recording begins when you reach the Punch In measure.
5. Play through the punch-in region and then listen back.

NOTE: If a pitch bend, volume change or sustain pedal command crosses the Punch In point, the last command sent may leave the data in between pitches, at a undesirable volume or with ringing notes. When this happens, you can fix it in Event Edit Mode (see Chapter 14, Event Edit) or in Measure Edit (see Chapter 8, Advanced Editing).

Thoughts On Punch In Recording

Trouble Shooting

If the performance isn't just right:

- It's possible that your playing might not have been right on the beat, either during Punch In recording or your previous performance. It can present an unrealistic challenge to play perfectly with the metronome at times. Try quantizing the part before you Punch In (see Chapter 8, Advanced Editing)
- You must regard the touch at which you played the previous part. If you play much softer or much louder, you'll hear the splice.
- It's best to play along with the preparatory bars to get the right feel of the music you're about to record.

Choosing the Best Of Two Performances

You can select between a new performance and the old performance by *punching in the new data on an unused track.* Then you can listen back and compare the new data with the old, still on the original track. If the new data is preferred, all you do is:

1. Erase the offending data from the original track with Measure Erase (see Chapter 8).

2. Then Bounce the two tracks together (see Track Bounce, later this chapter) and the new data formerly on a separate track is plugged right into the proper slot in the original track!

Track Editing Functions

The editing functions covered in this section address all the data on the selected track while all other tracks are unaffected. Many of these functions can be assigned to smaller regions of data, from single measures to individual MIDI events that are discussed in later chapters.

Erase

All the data on a track is erased with this function without affecting any other tracks.

To Erase All Data From A Track:

1. Select the Track Erase Page (Function 4/Page 3).
2. Select the track you want to erase and then select [EXEC].
3. The display prompts you, *Are You Sure?.* Press [Yes] to erase the data, [No] to cancel.

Track Copy

With the track copy function, the data on one track can be *duplicated* onto another. This can be useful if you want two sound programs to play the same data, yet you want to edit the duplicate data in some way, such as transpose or quantize.

To Copy Data To Another Track:

1. Select the Track Copy/Bounce Page (Function 4/Page 2). This page serves two functions - Copy and Bounce. Copy is automatically set when you select the page.
2. Press the [C] cursor key and select the Source Track. This is the track that data is copied *from.*
3. Press the [E] cursor key and select the Destination Track. This is the track that data is copied *to.*
4. Press [EXEC] and a duplicate of the source track is made to the destination track. If data already exists on the destination track, you'll receive a prompt, *Are You Sure?.* Press [Yes] to continue, [No] to cancel.

Track Bounce

The Bounce function combines the source track data with the destination track data *onto the destination track.* In the process the source track is cleared of data.

This function can be used to open up tracks for more recording or to combine note data on one track with non-note data on another (volume changes, sustain pedal, pitch bends etc.). It can also be used to combine several separately recorded percussion tracks onto one complete drum track.

To Bounce Data:

1. Select the Track Copy/Bounce Page (Function 4/Page 2).
2. Press the [Up] key to select the Bounce function.
3. Press the [C] cursor key and select the source track. All data is transferred from this track to the destination track, leaving the source track empty.
4. Press the [E] cursor key and select the destination track. All source track data is combined with data on the destination track.

NOTE: A track can't contain data on more than one MIDI channel or sound program. If the source data and destination data are on different channels and/or sound programs, they're combined on the destination channel and played by the destination sound program.

5. Press [EXEC]. At the prompt, press [Yes] to continue or [No] to cancel.

Track Parameter Page

All other track editing functions are grouped together on the Track Parameter Page (Function 4/Page 1). These are discussed one at a time in the order they appear on that page.

Program

As discussed in Chapter 6, Song Record, sound programs assigned to the track by this parameter become part of the song memory. You can change the program assignment at any time.

Program changes during play can be programmed into the sequence memory (see Chapter 12, Non-Note Data).

Volume

As covered in Chapter 6, Song Record, the basic volume setting assigned on this page becomes part of the song memory. This setting can be changed at any time and the new value replaces the old in the memory.

MIDI Volume changes can be recorded as part of the sequence memory for each separate MIDI channel (see Chapter 12, Non-Note Data).

Transpose

Each track can be transposed by an octave up or down. Each value degree represents a single half step, so to transpose a track up by a fifth interval you'd select a value of +07 (7 half steps equal a 5th interval).

The transposition you make on this page becomes part of the song memory.

NOTE: Avoid transposing drum tracks, because each note triggers a different sound. Transposing a drum track up or down results in your part being played by completely different sounds.

Detune

This parameter alters a track's pitch up or down by minute degrees, to a top of just under a half step. Each value degree is equal roughly to a microtone (100 microtones = whole step).

This parameter is used to slightly detune one track to the others. The result is a bigger, totally fatter sound, particularly when the sound programs in use are similar in timbre. You must use this function sparingly, however, or you may have a piece of music that just sounds out of tune.

Use this function when you layer more than one sound onto a part.

Pan

This parameter adjusts a track's position in the stereo spectrum when assigned to Effect Inputs A, B, C or D.

There are a number of details involved in Panning that are directly related to the Effects parameters, so I devoted Chapter 16 exclusively to covering these subjects.

Protect

When turned ON, the protect parameter prevents any recording or editing from being done to the track.

When you've got a satisfactory performance recorded on a track, it's a good idea to protect it. It's easy to accidentally select the wrong track as the Record Track and before you realize it, it's too late. When you want to Punch In or edit the data, just turn protect OFF.

Chapter Conclusion

This chapter introduced several editing functions that you'll see more of as this book progresses. Many of the functions can be assigned to smaller sections of data, and these applications are covered later in this section, beginning with the next chapter, Advanced Editing.

Chapter 8

Advanced Editing

In this chapter, several of the edit functions that appeared in the last chapter come up again. Where before they were applied to a whole track of data, here they're applied to single measures. If you've had some previous experience with sequencers, you'll know that the smaller the region an edit function can be applied to, the more versatile the sequencer. On the M1 there are three basic levels of editing discretion: track edit, measure edit and event edit.

Measure edit functions affect only the selected measures without affecting any others. You can use these edit functions to make corrections with quantize; to delete or erase just a single bar of unsatisfactory data; or, with Measure Copy, to create a full arrangement from just a few bars of recorded music.

Cut & Paste - Copy

Cut and Paste is a phrase denoting a common function among computer word processing programs that lets you take block of text and put it somewhere else. This function is a natural when applied to MIDI recording, especially when accompanied by its sister function, Copy.

When working with the written word, repeating phrases is strictly forbidden unless you're writing poetry or emphasizing a point - emphasizing a point. But with music, phrases are often repeated many times to draw the listener into the mood -- and the repetition is seldom boring (when treated properly, of course). Because this is true, a Copy function to duplicate repeated phrases of music seems an obvious way to build a musical arrangement without a lot of wasted recording time.

You won't find a menu page or parameter labeled Cut & Paste on the M1, but there are a handful of parameters that work together to provide the very same function. The first section of this chapter devotes itself to covering the *Cut & Paste* and Copy parameters and how they work together to help you create many different arrangement possibilities.

Measure Copy

The Measure Copy function lets you copy a measure, or group of measures, to anywhere you decide within the song, even from one song to another. You can send the duplicate data to any measure of any track of any song in the internal memory.

With Measure Copy you can save yourself a lot of recording time by merely copying repeat data, such as a bass line that repeats the same two-bar phrase throughout the whole verse. Or perhaps, taking the bass line for the verse section and giving it to the strings during the bridge. Anything is possible within the limits of the measure boundaries; you can't Copy a section of data smaller than a single measure.

NOTE: Copy uses valuable memory by duplicating existing data. If you simply intend to use the copied data over and over with no changes, you can save memory by copying the data into a pattern location (Get Pattern function) and then use the pattern repeatedly. Repeating a pattern again and again requires no extra memory (see Chapter 11, Pattern Record). If you intend to edit the duplicate data in some way, then use Copy. You can't edit a pattern without creating another, so it becomes 6 of one or a half-dozen of the other.

To Measure Copy:

1. Select the Measure Copy Page (Function 5/Page 2).
2. The cursor is on the Source Song parameter. You can select data that exists within another existing song in the internal memory. If you

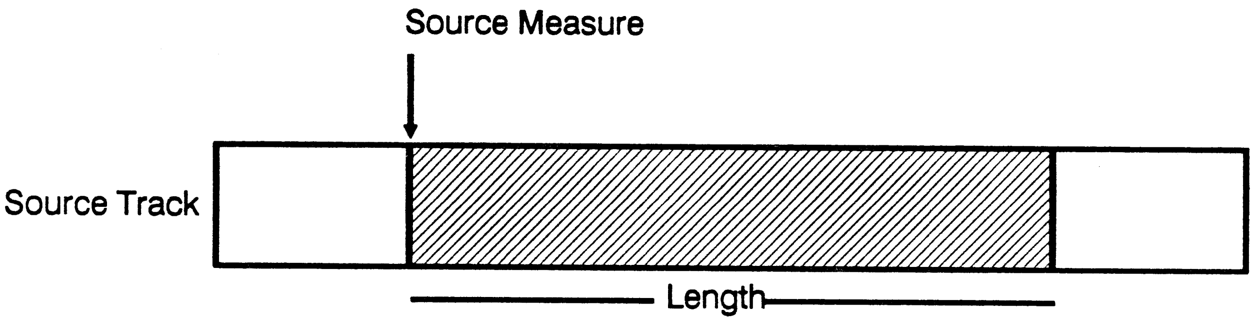
want to copy data from the currently selected song, you don't need to adjust this parameter; it's already selected for you.

This is a particularly nice feature not always available, even on the top-of-the-line computer software programs. It can be quite useful for interchanging drum beats that exist in different songs or trying to imagine a lead line from one song played over the harmony of another. Great for experimentation.

3. Move the cursor to the Source Track parameter and select the track number from which the data is copied.

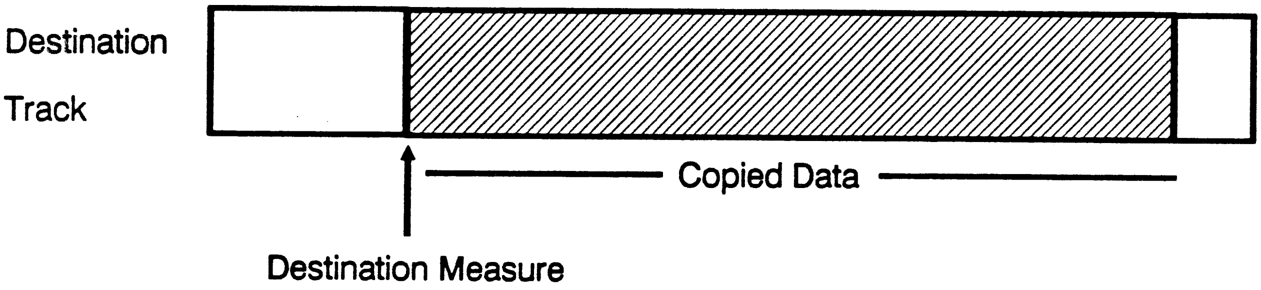
4. Next move the cursor to the Measure Number parameter and select the first measure to copied.

5. Select the Length parameter and define the length in measures to be copied. Now you've got the data block to copy defined:



6. Select a Destination Track.

7. Select the measure on the destination track the copied data starts on. This defines the destination region. If there's any existing data on the destination track within the measure region defined, it's replaced by the new data.



8. Select [EXEC]. If there's any current data on the destination track, you'll receive a prompt. Press [Yes] to continue or [No] to cancel.

You Can't Copy Data When:

- The destination region includes a Pattern.
- The time signatures differ between the source and destination. This applies only to the transfer of data between songs.
- If the range of the source region and the destination region overlap. This applies only when the source track and destination track are the same.

Measure Insert

Add blank measures anywhere within a track with the Insert function. This can be used in conjunction with measure Copy by making an empty space for the copied data.

To Insert Measures In A Track:

1. Select the Measure Insert/Delete/Erase Page (Function 3/Page 3).

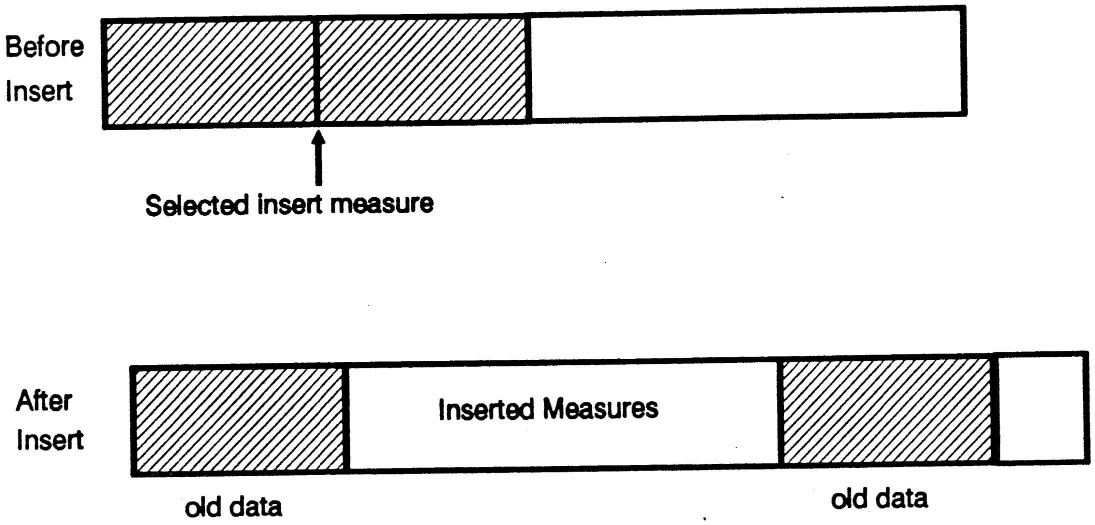
2. All three functions are addressed on this single page. Insert is already selected.

3. Move the cursor to the Track Number field and select the track you want to insert bars into. If you select *ALL*, the insert applies to all eight tracks. This can save you a few minutes if you want to add bars at the beginning of a song (recommended for Chain Play; see Chapter 5, Playback).

4. Move the cursor to the Measure Number field and select the measure where the empty bars start.

5. Select the Length field and define the length in measures of the space to be inserted.

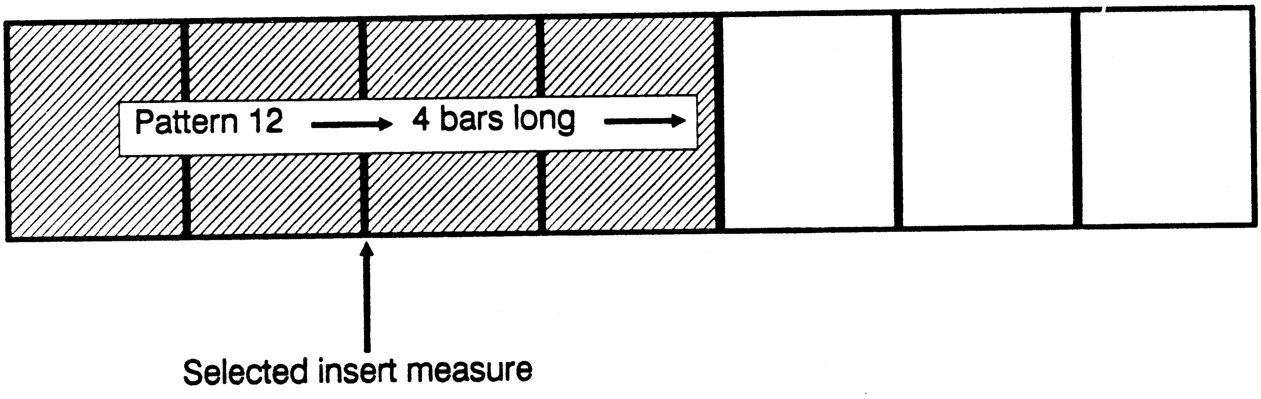
Measure Insert doesn't replace existing measures. Data following the defined insert measure is moved over.


Before
Insert
Selected insert measure
After
Insert
Inserted Measures
old data
old data

6. Press [EXEC] and insert is completed.

You Can't Insert When:

- The insert measure is in the middle of a Pattern. For instance, if a four-bar pattern begins two bars before the selected insert measure, the sequencer won't allow Insert to complete.


Pattern 12 ⟶ 4 bars long ⟶
Selected insert measure

Measure Delete

Delete completely removes measures from the track and shortens its total length. This differs from Erase, which removes the data and leaves a blank space.

To Delete Measures:

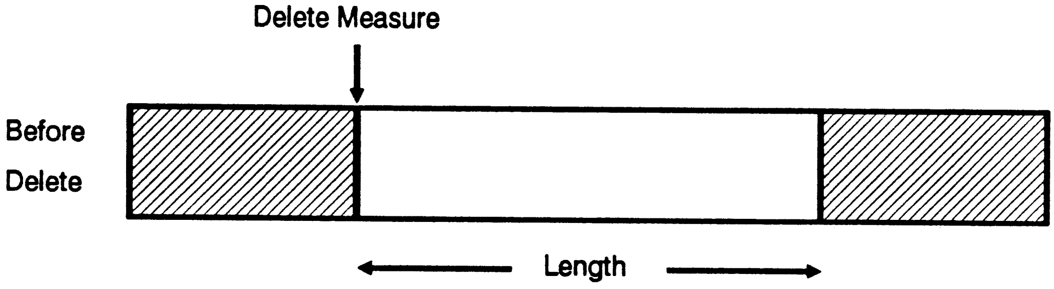
1. Select the Measure Insert/Delete/Erase Page (Function 5/Page 3).

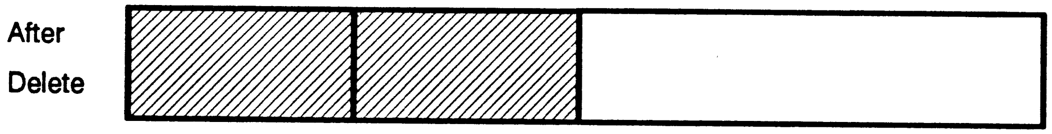
2. The cursor is underlining the Function field. Select *Delete*.

3. Move the cursor to the Track Number field and select the track you want to delete measures from. Select *ALL* if you want to delete measures from all eight tracks, thereby shortening the overall length of the song.

4. Move the cursor to the Measure Number field and select the delete measure -- the first measure in the delete region.

5. Select the Length field and define the length (in measures) of the delete region.





6. Select [EXEC] and you'll receive a prompt. Press [Yes] to continue or [No] to cancel.

You Can't Delete When:

- The delete measure (the first measure in the delete region) is in the middle of a pattern.

Measure Erase

Erase removes performance data from a track and leaves empty measures. It doesn't alter the whole length of the track.

You can select the data type to be erased, thereby saving the notes when control data (sustain pedal, volume changes, program changes etc.) is selected or saving the control data when note data is selected to be erased. This is particularly handy if you played a dynamite performance but messed up the pitch bends, aftertouch or some other controller. The offending data, once erased, can be re-recorded on another track and then Bounced back to the original track.

To Erase Measures:

1. Select the Measure Insert/Delete/Erase Page (Function 5/Page 3).

2. The cursor is underlining the Function field. Select *Erase*.

3. Select the cursor to the Track Number field and specify the track you want to erase data from. Select *ALL* if you want to erase data from all eight tracks.
4. Move the cursor to the Measure Number field and select the erase measure (the first measure in the erase region).

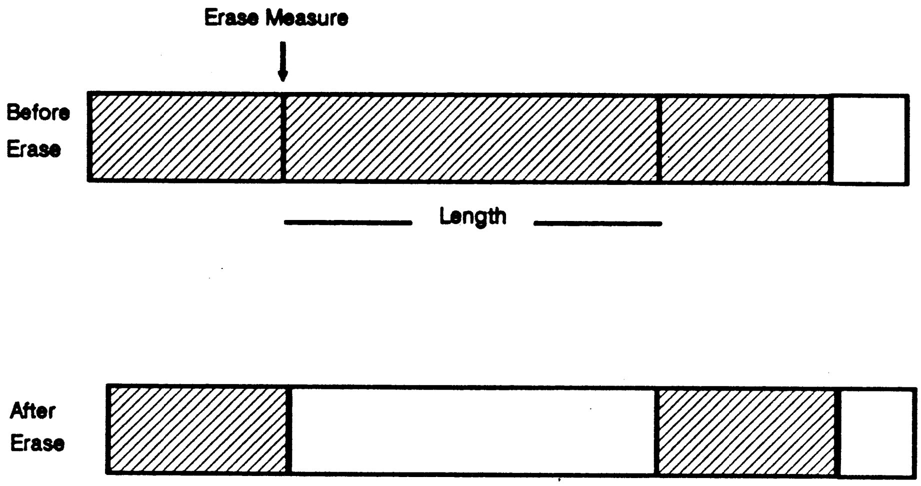
5. Select the Length field and define the length (in measures) of the region you'll erase data from.

6. Finally, select the data type to be erased:

   - **ALL** - Both note and control data (non-note data) is erased.
   - **NOTE** - Only note data is erased. All control data remains.
   - **CTRL** - Only control data is erased and all notes remain.

7. Select [EXEC] and at the prompt press [Yes] or [No].

The specified data is removed from the erase region, leaving the region blank or containing data not selected for erase.


Erase Measure
Before Erase
Length
After Erase

You can't Erase when:

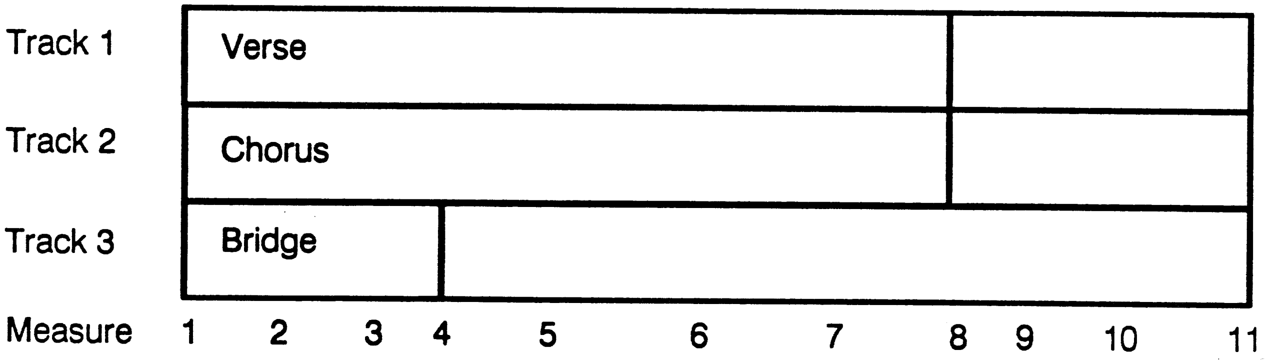
- The defined first measure in the erase region is in the middle of a pattern.

NOTE: Patterns are erased only when ALL is selected as the data type to be erased, and not when NOTE or CTRL are selected.

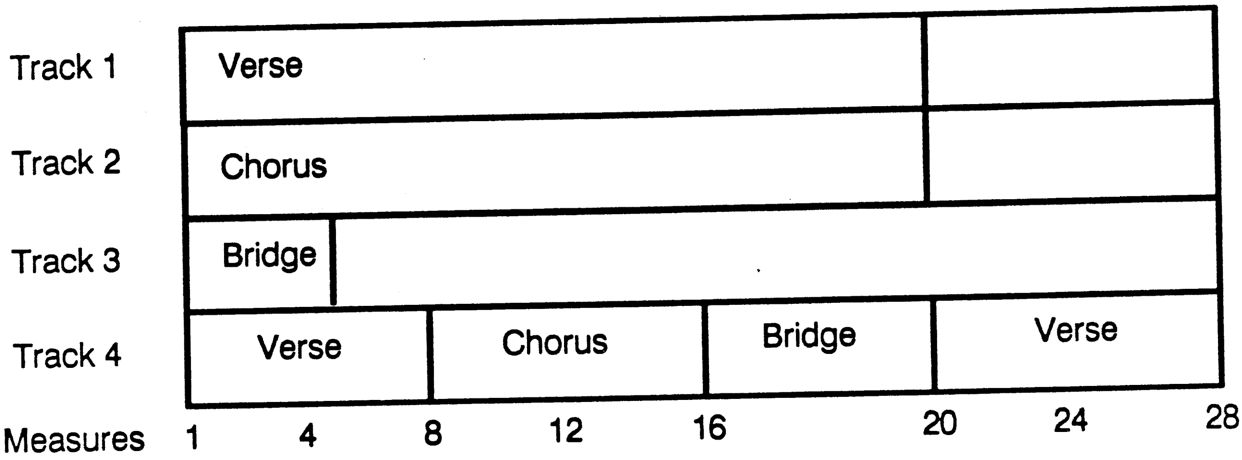
Arranging Tips With Measure Edit

With measure Insert, Delete, Erase and Copy the M1 becomes an arranging drawing board. You can audition a number of arranging possibilities, or create a full arrangement from just a few bars of recorded material.

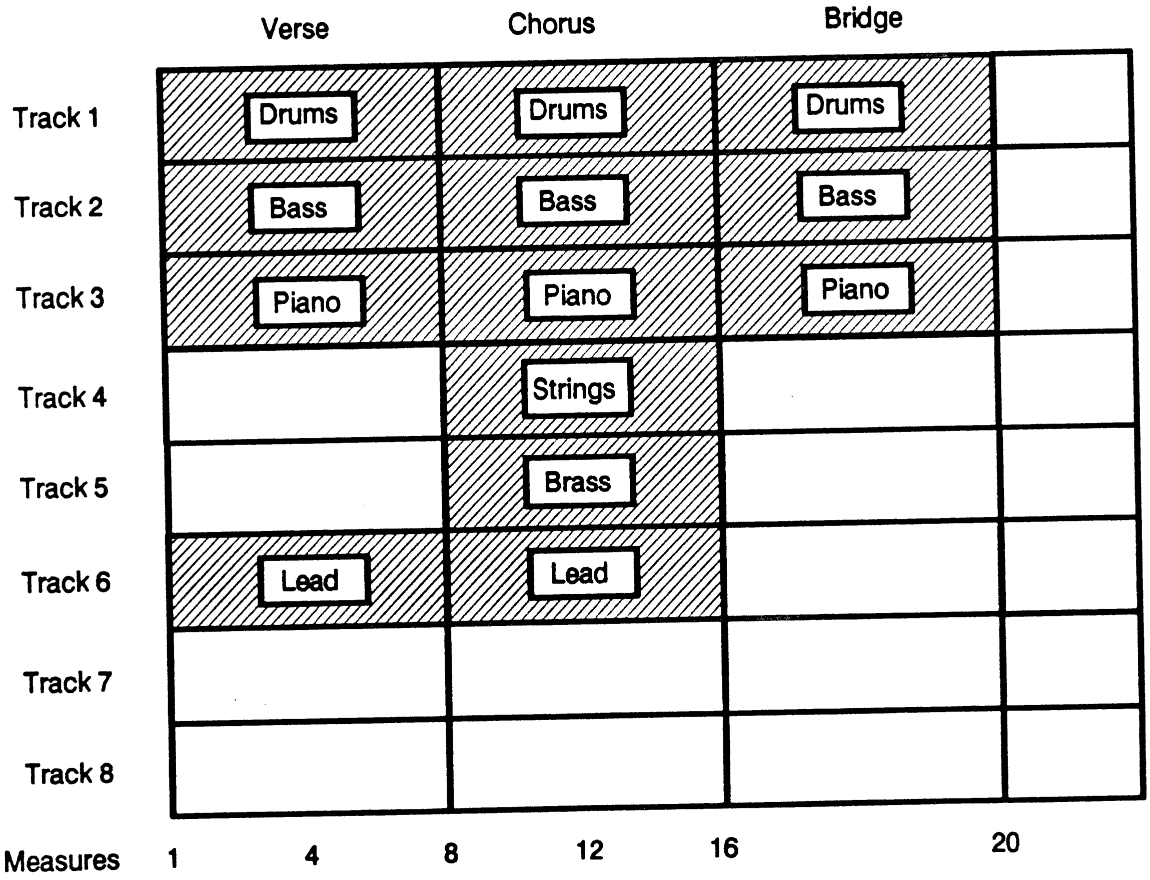
For example, in the beginning stages of recording a project, you can record a working version of the verse section on Track 1, the chorus section on Track 2 and the bridge on Track 3.


Track 1
Verse
Track 2
Chorus
Track 3
Bridge
Measure
1
2
3
4
5
6
7
8
9
10
11

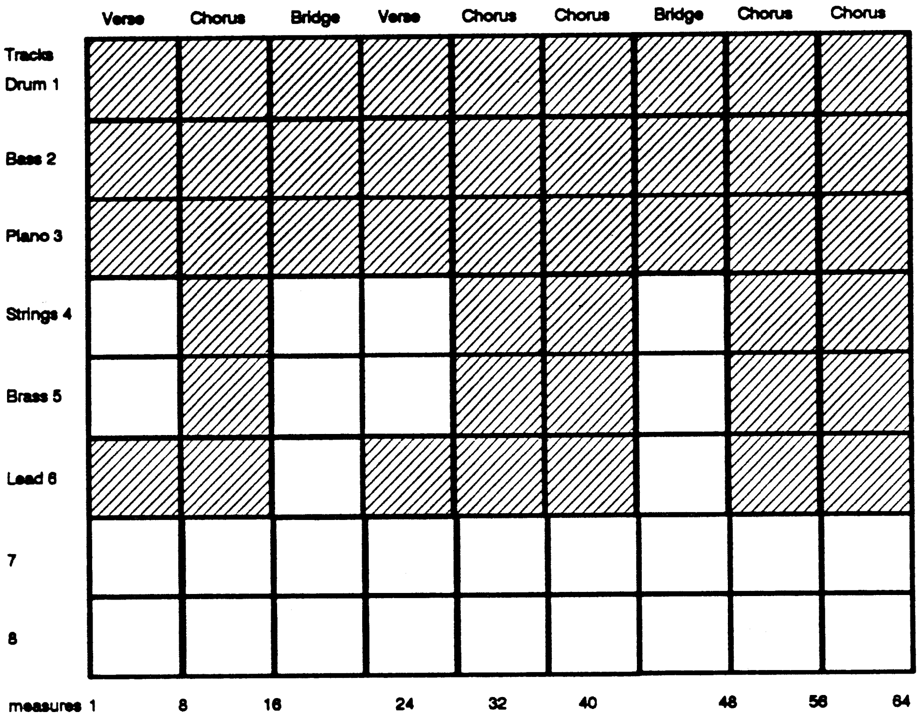
Then with Copy, Insert, Delete and Erase you can piece together different variations of these three sections onto other tracks.


Track 1
Verse
Track 2
Chorus
Track 3
Bridge
Track 4
Verse
Chorus
Bridge
Verse
Measures
1
4
8
12
16
20
24
28

After deciding on a suitable arrangement, you can record the instrumentation in three sections...


Verse
Chorus
Bridge
Track 1
Drums
Drums
Drums
Track 2
Bass
Bass
Bass
Track 3
Piano
Piano
Piano
Track 4
Strings
Track 5
Brass
Track 6
Lead
Lead
Track 7
Track 8
Measures
1
4
8
12
16
20

...and then piece it all together.



Tracks	Verse	Chorus	Bridge	Verse	Chorus	Chorus	Bridge	Chorus	Chorus
Drum 1	▨	▨	▨	▨	▨	▨	▨	▨	▨
Bass 2	▨	▨	▨	▨	▨	▨	▨	▨	▨
Piano 3	▨	▨	▨	▨	▨	▨	▨	▨	▨
Strings 4		▨			▨	▨		▨	▨
Brass 5		▨			▨	▨		▨	▨
Lead 6	▨	▨		▨	▨	▨		▨	▨
7									
8									
measures	1	8	16	24	32	40	48	56	64

After you have the basic instrumentation version of the piece put together, you can make changes to the repeated data with the edit functions.

Quantize

The M1 supports a rhythm-correct feature called *Quantize*. This is a function that corrects small timing errors by moving all incoming data to the nearest beat division that you select. Any imperfections in your playing are automatically corrected after the recording process so that what you end up with is a perfectly played performance.

This is particularly useful if you're overdubbing a number of drum parts and want them to play perfectly together. It would be tough to get each and every timing detail just right without quantize. It's also handy for Punch In/Out recording to make the splice letter perfect.

As you'll discover, however, quantize can take some of the feeling out of a performance by removing all human imperfections. This is why it should be used only as a help feature and not as a crutch for poor technique.

Quantize can be assigned to an edit region as small as a single measure.

To Quantize a Performance:

1. Select the Quantize Page (Function 5/Page 4).
2. Select the track number you want to apply quantize to.
3. Move the cursor to the Measure Number field and select the first measure in the edit region.
4. Define the length of the edit region in the Length field.
5. Set the Resolution.

Quantize moves all the recorded notes to the nearest beat division you select. Make it a rule of thumb to select a value that represents the smallest beat division of the part you're quantizing. If there are 16th notes in the track you're quantizing, you should set the value to a 16th note. If there are 32nd notes, then set the value accordingly.

These are the choices you have:

The resolution value is represented in quarter-note fractions exactly like the resolution parameter you worked with on the Record Set Up Page - (/2 = 1/2 quarter note or an 8th note).

/48 = High resolution - This value makes no change to your note performance, it's used when thinning out continuous controller commands.

♩/24 = 64th note triplets

♩/16 = 64th notes

♩/12 = 32nd note triplets

♩/8 = 32nd notes

♩/6 = 16th note triplets

♩/4 = 16th notes

♩ /3 = 8th note triplets

♩ /2 = 8th notes

♩ /1 = Quarter notes

NOTE: You can't quantize duplets and triplets in the same edit region. It's possible to limit the edit region to a single measure, but if both types of note rhythms are within the same measure, you'll have to sacrifice quantizing that measure.

6. Define the data type to be quantized.

- **ALL -** All note and control data is quantized.
- **NOTE -** Only note data is quantized and the control data is unaltered.
- **CTRL -** Only the control data is quantized and the notes are left unaltered.

Continuous controller data such as pitch bends and aftertouch take up an inordinate amount of memory. You can effectively *thin out* the hundreds of commands in a pitch bend or aftertouch message without any audible result by selecting the high resolution value (/48) and quantizing CONTROL data.

If you quantize control data with any resolution other than High, pitch bends, volume changes and aftertouch messages sound jerky and disjointed instead of smooth and gradual. When quantizing a note performance, always select the NOTE data type to ensure the continuous controller commands remain nice and smooth.

7. Select [EXEC] and at the prompt press [Yes] or [No].

Upon listening back, if you played the part reasonably close in the first place, it comes out perfectly in time. If you wavered too much, you'll hear some notes sounding together where they were played separately, along with some unusual timing glitches.

If this is the case, remember: Quantize corrects rhythmic errors to the *nearest* beat division you selected. The M1 doesn't know which beat division is the correct one in the music you're playing. It only knows how to move notes to the beat division that's nearest to where you actually played them.

Chapter 9

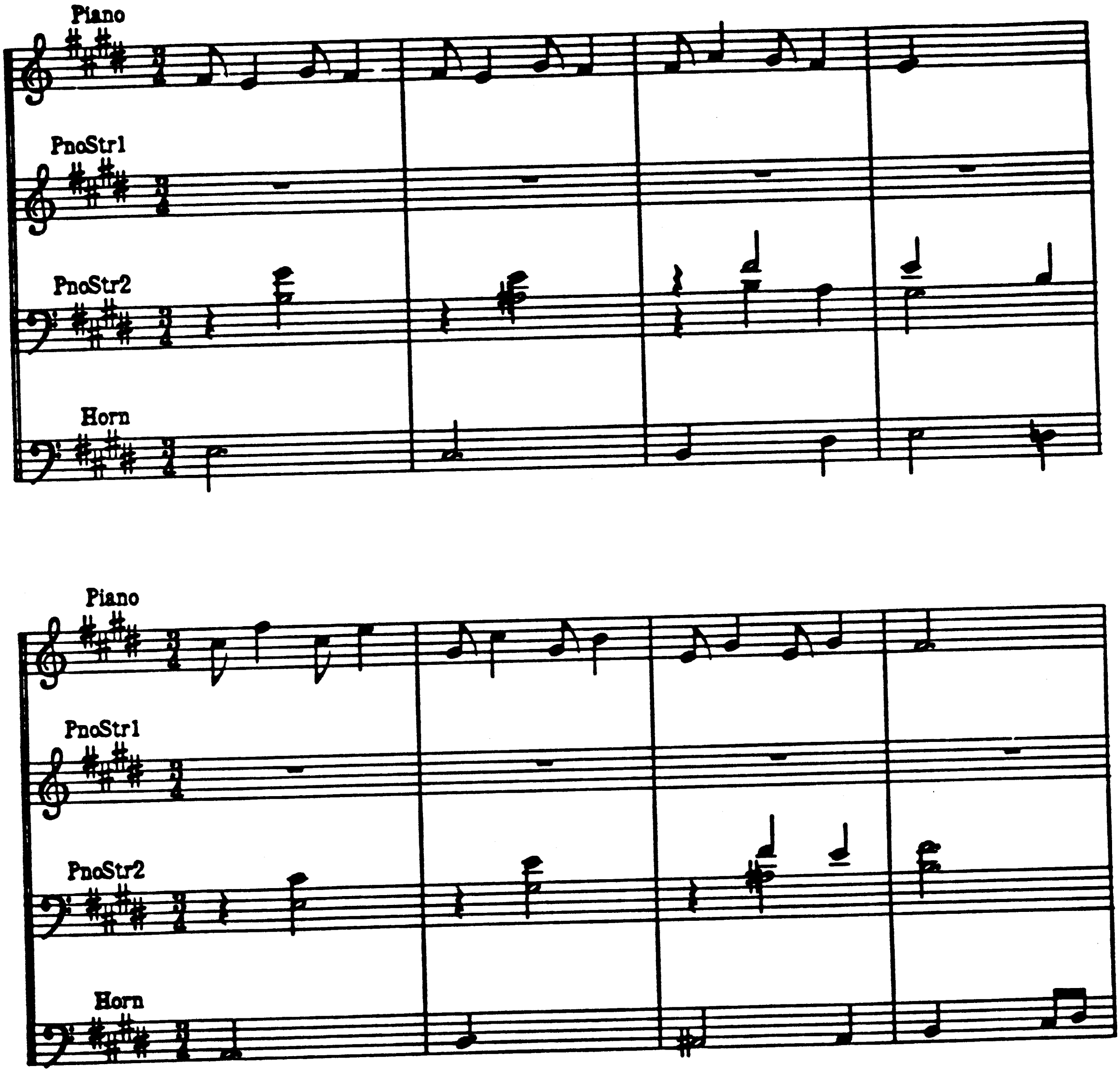
Real Time Recording Exercise

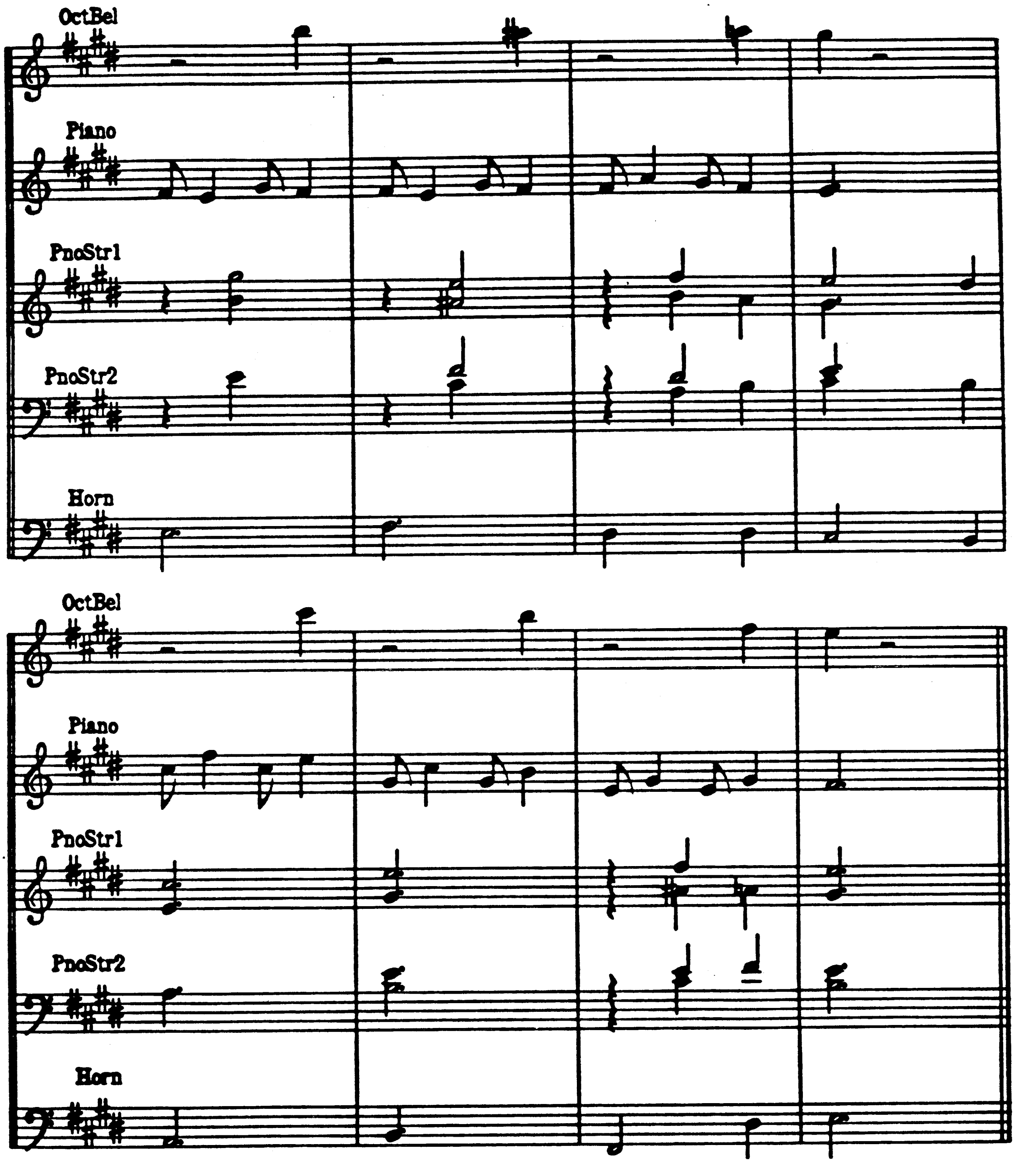
To apply all the functions covered so far, I've organized a simple recording session. The guidelines listed for this session are generalized and offer suggestions as to the approach you should take to accomplish certain goals. I've refrained from including specific button-pressing steps, which I'm sure you can use a break from anyway. If you need to, consult earlier chapters for the detailed procedure.

The music I chose is *Bethena Waltz* by Scott Joplin, the famed ragtime composer noted for his *Maple Leaf Rag* and the ubiquitous *Entertainer,* currently playing everywhere from practice rooms to ice cream trucks. I chose this piece because it's simple, yet offers certain challenges. It's also a personal favorite.

Listen to the tape for a rendition of the arrangement discussed below. The score also appears below, but you can learn the music by ear if you prefer, because each track is played separately on the tape.

Bethena Waltz


Piano
PnoStr1
PnoStr2
Horn
Piano
PnoStr1
PnoStr2
Horn


OctBel
Piano
PnoStr1
PnoStr2
Horn
OctBel
Piano
PnoStr1
PnoStr2
Horn

Prep for Recording

1. Initialize a new song. Remember to set the beat to 3 because the piece is in 3/4 time - Song Initialize Page (Function 3/Page 2).

2. Set the Basic Tempo, about 115 - Song Parameter Page (Function 3/Page 1).

3. Select a track as the Record Track - Record/Play Page (Function 0/Page 1).

4. Set the track status. If you're using just the M1, you can leave this where it's already set - Track Status Page (Function 1/Page 3).

5. Set the track MIDI channel. Again, if you're using just the M1, the default MIDI channel settings will do for now - MIDI Channel Page (Function 0/Page 3).

6. Select a piano sound program for track 1 - Track Program Page (Function 1/Page 1). Play the keyboard and you should hear the piano sound only.

7. Turn the metronome on - Record Set up Page (Function 0/Page 2).

8. If you want to set the resolution value, set it to /2 = 8th notes. - Record Set Up Page (Function 0/Page 2). Since the piano part is the lead line, I recommend you record it at the high resolution to give it more of a human quality.

9. Return to the main Record/Play display. Press [Rec], set a comfortable tempo for yourself, and then record all 16 bars of the piano part.

10. Select Track 2 as the record track. If you're using an external MIDI sound module, set the track status and MIDI channel. Select a horn sound program.

11. Record all 16 bars of the horn part on Track 2.

12. Select Track 3 as the record track and set the tract status and MIDI channel if you're using and external MIDI sound module. Select a string sound program.

13. Record the String 2 part on Track 3.

14. Now, since Track 4 is a string part (String 1), the same MIDI channel should be selected as was used for Track 3. Next select the same string sound program.

15. Since this part begins on measure 9, try punching it in instead of recording it regularly. Change the mode to *P.IN* and then select the Record Set Up Page to define the punch in measure (M009) and punch out measure (M017).

16. Return to the main Record/Play display and set the measure number to 6; then press [Rec] and play the string part on Track 4 when you reach bar 9.

17. Bounce Track 4 (source track) to Track 3 (destination track) so both string parts are on one track (Track 3).

18. Select Track 4 as the record track and if you're using an external sound module, set the track status and MIDI channel. Select a bell sound program.

19. Record the bell part starting on measure 9 also.

That's the basic core of the arrangement. To create the full arrangement heard on the tape, some data manipulation comes into play.

Create the Arrangement

Intro

1. Insert four measures onto the beginning of all tracks.

2. Select Track 5 as the record track and select the piano sound program (if you're using an external sound module, select the MIDI channel you assigned to the piano sound earlier).

3. Record the four-bar intro as heard on the tape.

4. Bounce Track 5 (source track) to Track 1 (destination track) and the piano intro joins with the piano melody.

Bridge

The Bridge consists of data already recorded which can be manipulated.

1. Copy measures 17 and 18 of the horn part (Track 2) to the end of itself. The Copy Measure Page should read:

T2 (source) - M017 (1st copy measure) - L002 (length) - T2 (destination) - M021 (destination measure)

2. Do the same to Track 3 (Strings).

3. Insert two bars at measure 21 on Tracks 1 (piano) and 4 (bell) to even them up.

4. Now Copy measures 21 and 22 of the horn part (Track 2) to the end of itself. The Measure Copy Page should read:

T2 (source) - M021 (1st copy measure) - L002 (length) - T2 (destination) - M023 (destination measure)

5. Do the same to the string parts on Track 3.

6. Now Copy measures 17 and 18 of the piano part (Track 1) to measures 23 and 24 of Track 1. The Measure Copy Page should read:

T1 (source) - M017 (1st copy measure) - L002 (length) - T1 (destination) - M023 (destination measure)

7. Do the same for the bell part (Track 4).

8. Now Copy measures 21 and 22 of the horn part to the end of itself (measure 25). The Measure Copy Page should read:

T2 (source) - M021 (1st copy measure) - L002 (length) - T2 (destination) - M025 (destination measure)

9. Do the same to Track 3 (strings).

Now the piece is transposed up a step. On the M1 you can't transpose only part of a track, so we'll copy all the necessary data to the empty tracks 5 - 8.

To finish the bridge:

10. Copy measures 23 and 24 of Track 1 (piano) to measure 27 of Track 5. The Measure Copy Page should read:

T1 (source) - M023 (1st copy measure) - L002 (length) - T5 (destination) - M027 (destination measure)

11. Copy measures 23 and 24 of Track 2 (horn) to measure 27 of Track 6.

12. Copy measures 23 and 24 of Track 3 (strings) to measure 27 of Track 7.

13. Copy measures 23 and 24 of Track 4 (bell) to measure 27 of Track 8.

Final Section

Now you should have 26 measures of data on Tracks 1 - 4 and two measures of data on Tracks 5 - 8. These last two measures of the bridge serves as the modulation bars to the new key. What follows is simply a repeat of the first 16 bars of the piece. Since we haven't experimented with Patterns yet, we'll simply copy the data.

1. Copy measures 5 - 20 of Track 1 (piano) to measure 29 of Track 5. The Measure Copy Page should read:

T1 (source) - M005 (1st copy measure) - L016 (length) - T5 (destination) - M029 (destination measure)

2. Copy measures 5 - 20 of Track 2 (horn) to measure 29 of Track 6.

3. Copy measures 5 - 20 of Track 3 to measure 29 of Track 7.

4. Finally, copy measures 5 - 20 of Track 4 to measure 29 of Track 8.

Now, to engage the transposition:

5. Select the Track Parameter Page (Function 4/Page 1) and select Yrack 5. Raise the transposition value to +02.

6. Select Yracks 6, 7 and 8 and assign the same transposition value.

7. Listen back and you'll hear the full arrangement of *Bethena Waltz* as on the tape, transposition and all.

NOTE: The version on the tape employs tempo adjustments to create the rubato feeling during the intro and final bars. This is possible to achieve on the M1, but you need an empty track to do it (see Chapter 17, Additional Features).

Chapter 10

Song Record - Step Time

Step-Time Recording is the method first employed by the early analog sequencers and therefore has many supporters among composers who have been using sequencers for a while. One reason it's still advocated is that it allows the composer the most control of his/her music. With Step-Time Sequencing, each Step or Event in the music, including all the notes and rests, are input separately.

Those of you who are comfortable with the Real-Time recording method may view Step-Time as unnecessarily laborious. This can be true at first, but after a little practice it becomes second nature. You'll find that the Step-Time method is very useful when you encounter a passage that's too difficult to play well, or when you want a part played with a machine-like effect.

A common criticism of this method draws attention to the impersonal process of inputting data instead of playing it. It's true that Step-Time recordings can sound mechanical and strict but, on the other hand, individual touches of volume and tempo changes CAN be added by the skilled user to make the music quite intimate.

It just takes a little practice!

Reading the Step Time Display

All the tools you need to input a step-time performance are on one menu page.

To access the Step Time Page:

1. Select the Step Recording Page (Function 2/Page 1).
2. Select the track number to record on and specify the measure number recording begins on.
3. Press [Rec] and then press [Start/Stop]. The display changes to show the Step Recording parameter screen.

In step-time recording, there are four basic elements you must address.

The first one is Pitch.

Pitch

You won't see a parameter for pitch because you select pitch by playing notes on the keyboard and the display doesn't monitor your selections.

Each time you play and release a key on the keyboard, the sequencer records the pitch or pitches you played. The rhythmic value or beat division assigned to the pitch, whether it's an eighth note or a quarter note, is specified by the Step value.

This is the second of the four elements in Step Time recording.

Step Value

The resolution or step value is shown on the far left in the display.

Step-Time recording involves inputting each individual Step or musical event into a piece of music one at a time. But what is a Step, and how is it determined?

In music, every bar is divided by rhythmic note values into quarter notes, eighth notes, sixteenth notes and so on. Each Step is also a division of the bar. The size of a Step is determined by the Step value, ranging from a whole-note division (just one step in a 4/4 bar) to a 32nd note (32 steps in a 4/4 bar).

The Step value is set with two parameters, the Step parameter and the Triplet/Dot parameter.

The Step parameter values as they appear on the display:

- 1/1 = whole note
- 1/2 = half note
- 1/4
- 1/8
- 1/16
- 1/32

With only these step values at your disposal you're limited to just duplet passages because triplets are not represented. But these are just the basic beat division values and can be adjusted into triplets or dotted notes with the parameter that appears immediately to the right of Step Value.

The Triplet/Dot parameter changes the selected step value into a triplet or a dotted note. There are three value choices in this parameter:

- [----] = No change to the selected step value.
- [TRIP] = The step value is changed to a triplet. If the current step value is an 8th note, selecting TRIP changes the step value into an 8th note triplet. When you play a key on the keyboard you input an 8th note triplet.
- [DOT] = The step value is dotted.

You simply select the step value for the passage you want to record and play the keyboard to select pitch.

For example, if you've an 8th-note passage, then you set the step value to an 8th note and each time you play a note on the keyboard, the M1 advances one step to the next 8th-note division. The step value can be changed at any time during the recording to allow you to input any beat division.

Next to the step value parameters on the display, you'll find the Key Dynamics parameter.

Key Dynamics

Key Dynamics is the most important element at your disposal to add human expression to an otherwise mechanical recording. If you adjust the value of key dynamics properly, you can turn a delightful phrase. It takes planning and some foresight, but the results are worth it and your expression is quite limitless given the range of key dynamics values.

Touch sensitivity is determined by the key-dynamics setting for each step. The sequencer doesn't record the force with which you strike the keys on the keyboard in step-time recording; all your expression must come from the key dynamics parameter.

The chart below, courtesy of Korg, shows you the range of values and their relative audible result, plus their MIDI velocity value equivalents.

Key Dynamics Chart:

Value	Strength	MIDI Velocity Value
ppp	Pianississimo	24
pp	Pianissimo	44
p	Piano	54
mp	Mezzo Piano	64
mf	Mezzo Forte	74
f	Forte	84
ff	Fortissimo	94
fff	Fortississimo	114

NOTE: Sound programs respond differently to velocity control with respect to the way they're programmed. Some may not respond at all (such as organ sounds, which ordinarily don't have touch control), while others may respond in radical extremes. Before you begin inputting a step-time performance, experiment with the sound program you intend to use from the keyboard first.

To the right of the Key Dynamics parameter is the Staccato/Tenuto parameter, which determines the articulation of the note.

Articulation is the fourth element in step-time recording.

Articulation

The articulation of a note refers to how long it's held of its rhythmic value. If a note is struck and then released very quickly, it's held very little of its actual value, or played staccato. If it's held its entire value, the result is extremely smooth playing between notes, and this is called tenuto. In normal playing a note is generally held about 80% of its full value. The remaining 20% of time is used in passing from one note to the next.

The articulation of each step is determined by the Staccato/Tenuto parameter. There are three value choices:

- [STAC] - The note is held 50% of its full step value and the result is short disconnected playing.
- [----] - The note is held 80% of its full step value and the result is normal connected playing.
- [TEN] - The note is held the full 100% of is step value and the result is extremely smooth and connected playing.

Other Considerations

Inputting Rests

Rests are simple. They don't need to be articulated or dynamically played. All you do is select the step value, alter it if necessary with the triplet/dot parameter, and then select the Rest parameter [RST] on the display. The sequencer inputs a rest and then advance one step.

Tied Notes

Tied notes can both be of the same rhythmic value or of different values. The procedure for inputting them is almost the same either way.

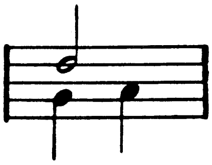
There are four steps:

- First select the step value with the step parameter and the triplet/dot parameter.

- Next play the note on the keyboard. The sequencer advances one step.
- Select another step value if the second note in the tie is of a different rhythmic value.
- Select [TIE] on the display and the sequencer advances the additional step.

What you hear is the note being held for the length of the tie.

You can use the TIE parameter to input notes played together but of different values, such as a half note above two quarter notes.



To achieve this, simply set the step value to a quarter note and play the D, but don't release it. While holding the D, play the G. Now, while still holding the D, release the G and select the [TIE] parameter on the display, the sequencer advances one step. Continue to hold the D and play the A; the sequencer doesn't advance but records the A. When you hear it played back, the D holds while the G and A play beneath it.

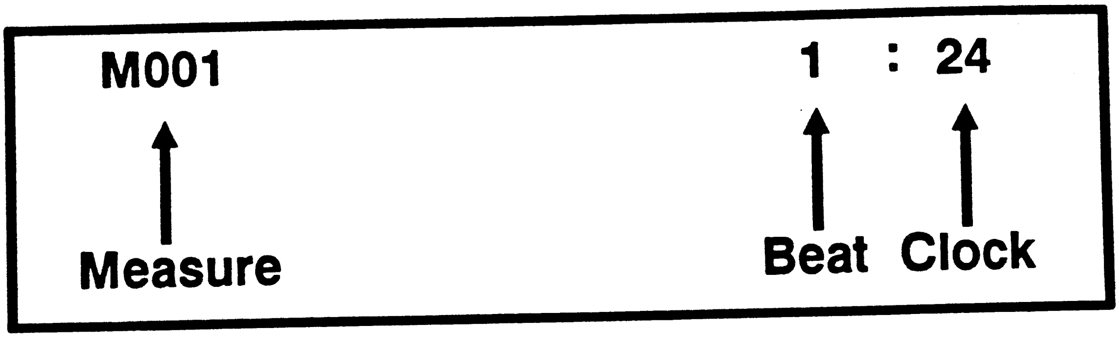
Recording Chords

Chords are input two ways: Play and release more than one note at a time, or play one note in the chord and, while holding it, play the others. The sequencer doesn't advance until all the notes are released. In this way you can record chords that are impossible to play, even with two hands.

Clock Times

The current position in the recording is displayed at the top center of the screen. The measure number is labeled in the usual manner, and the current position within the measure is labeled in Beats (quarter-note divisions) and Clock Pulses (equal to 1/48 of a quarter note.

See example on next page.



If you input a quarter note, you can expect to see the position change by one beat value. When you input an eighth note, the Clock pulse value advances by 24 (half of 48 = 24). When you input a 16th note, the clock pulse value advances by 12, and so on.

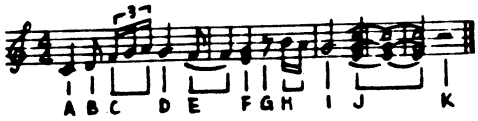
When you Make a Mistake

If you make a mistake (infrequent, I'm sure, but it's been known to happen) all you do is select the [> <] symbol on the display and you go back one step at a time.

Practice Run

Take some time to input this short exercise. It represents many of the challenges you'll encounter in step-time recording.

1. Select an empty Song location.
2. Select the Step Recording Page (Function 2/Page 1).
3. Select Track 1 and start the recording on measure 1.
4. Press [Rec] and then press [Start/Stop]. The step record display is shown on the screen.



A: The first note in the passage is a quarter note, so set the step parameter to 1/4 to select the quarter note. Set the key dynamics parameter to *pp* and play middle C on the keyboard. The sequencer advances one Beat value, indicating a quarter note step has been recorded.

B: The next note is an eighth note, so select the eighth note value in the step parameter (1/8) and play the E above middle C on the keyboard. The position indicator advances by 24 clock pulses so it now reads - M001 2:24.

C: Next we come to some 16th-note triplets. First select a 1/16 value in the step parameter and the select *TRIP* in the triplet/dot parameter. You've now selected a 16th-note triplet step value. Set the dynamics parameter to *f* and the staccato/tenuto parameter to *Stac*. Play F on the keyboard. Set the dynamics parameter to *mf* and play G. Finally set the dynamics to *mp* and play and A. The position indicator advances by eight clocks with each note and now reads - M001 3:00.

D: The next note is a dotted quarter. Select a 1/4-step parameter value and then select *DOT* in the triplet/dot parameter. Set dynamics to *p* and staccato/tenuto to "----" and play G on the keyboard. The position indicator advances to - M001 4:24.

E: Now we come to a tied eighth note to a quarter note. Select a 1/8-step parameter value. Change the triplet/dot parameter back to "----", change dynamics to *mf* and play F on the keyboard. The position indicator advances 24 clocks. Next change the step parameter value to 1/4 and then select [TIE] on the display. The position advances a full beat and now reads - M002 2:00.

F: Now we have two half notes played at once. Set the step parameter value to 1/2 and then play the E on the keyboard and without releasing, play the G. The position advances to - M002 4:00.

G: Next is an 8th-note rest. Set the step parameter value to 1/8 and then select [RST] on the display. The position advances 24 clocks.

H: Input the next two 16th notes by setting the step value to 1/16, dynamics to *mp* and then playing B. Change dynamics to *mf* and then play A. The position reads M003 1:00

I: Input the dotted half note by setting the step parameter to 1/2 and the selecting *DOT* in the triplet/dot parameter. Change dynamics to *f* and play G on the keyboard; the position advances to - M003 4:00.

J: Now for the last chord, which is tied across three measures, begin by selecting the first step parameter value in the tie - a quarter note (1/4).

Set the triplet/dot parameter to "----" . Change dynamics to *ff* and play all three notes in the chord together (E, G and C). The position advances on full beat to M004 1:00. Next change the step parameter to 1/1 (whole note) and then select [TIE] on the display. The position advances four beats to M005 1:00. Finally, set the step parameter to 1/2 and select [TIE] on the display again; the position advances two more beats to M005 3:00.

K: At the end we have a half-note rest. Set the step parameter value to 1/2 and select [RST] on the display. The position advances two beats and now reads M006 1:00.

Listen back and you'll hear a performance that includes dynamics and articulation variety.

Step Recording Session

The Bach Fugue which appears second on the tape was recorded in Step Time. Each voice in this three-voice Fugue is assigned a different sound program and thereby produces the separation in timbre which dynamically accents the individual melodies all playing at once.

Give the music a try. You can work for a while, stop and come back later and not miss a beat. Take your time building the piece one voice at a time, beginning with the middle voice which starts the piece off. Move horizontally from beginning to end with each voice individually. Select some unusual sound programs for the voices -- the more unusual, the better. Listen to *Switched on Bach* for some inspiration in the style of synthesized Baroque music.

The slowdown at the end can be programmed on the M1 onto an empty track (see Chapter 17, Additional Features).

Section Conclusion

This section brought you up to speed in several recording and editing functions in preparation for more advanced applications covered in Section 3. The next section takes you through non-note data manipulation and MIDI event editing. Pattern recording and track panning are covered, plus setting up the processing effects.

Section 3

As you're beginning to discover, the M1 is an extremely capable machine, fulfilling all three roles of MIDI recording most admiringly -- as controller, sequencer and sound module. Where the previous two sections of this book have just begun to scratch the surface of its facility, this third and final section delves into much greater detail. We'll take a magnifying glass to the machine and find out just what it can and can't do.

Chapter 11

Pattern Record

Patterns hold data one track thick and up to eight bars in length. Once a performance has been recorded into a pattern location, the pattern can be inserted into any track at any measure number and as many times as needed in a song.

Patterns should be used whenever a section of music is repeated verbatim to conserve memory because, unlike the Copy function, the data isn't duplicated. Instead, a performance is recorded only once and then this recording is used over and over. Whenever data is duplicated with the Copy function, more memory is consumed, but using the same pattern again and again takes up no extra memory.

Inputting a pattern number into a track tells the sequencer to call up that pattern at a specified measure. No performance data is transferred. If you viewed the data in event edit mode, all you'd find is the command to call up the pattern number and nothing else. For this reason, patterns can't be edited as normal track data. They can be altered in Pattern Record mode, but then the edited pattern is different every time its used.

Tracks can contain patterns and performance data both, but not at the same time. Performance data can't overlap patterns and neither can patterns be overlapped by other patterns.

Pattern Record/Real Time

Recording performance data into a Pattern location is very similar to Real Time Song Record with one notable exception. The pattern loops repeatedly during recording, allowing you to add a note here and there as the pattern plays. Every note you play while the sequencer is in motion is recorded as part of the performance. This is exactly like recording on a drum machine that suggests that patterns, though useful with all variety of sound programs, were designed with drum tracks in mind.

Select A Sound Program

The sound program you hear while recording a pattern is the one assigned to the currently selected Record Track. To hear a particular sound program, select a Record Track on the Record/Play Page and then assign a sound program on the Track Parameter Page. When a pattern is inserted into a track, the data is played by the sound program assigned to that track and not necessarily the one you heard while recording.

Commonly, a pattern is recorded with a particular destination track in mind. Keep all your ducks in a row right from the beginning by selecting the destination track for your new pattern as the Record Track, and you'll hear the sound program assigned to that track while recording.

Initialize Patterns

The first step to recording a new pattern is to Initialize a pattern location. If the pattern already contains data, initialization destroys all current data and empties the pattern. The initialization procedure sets the length from 1 to 8 measures and the Beat value. All unused patterns are defaulted to a one-measure length and a beat value of 4. If you want to change these parameters, you must initialize the pattern location.

To Initialize A Pattern:

1. Select the Pattern Initialize Page (Function 6/Page 2).

2. Select the pattern location number from 00 - 99.

3. Select the Beat value from 2 - 6. A quarter note always gets one beat (for a full explanation of Beat value see *Beat Value*, Chapter 6, Song Record/Real Time).

NOTE: Patterns can't be inserted into songs with incompatible Beat values. A Pattern can only be inserted into a Song with the same Beat value.

4. Select the Length from 1 - 8 measures.

5. Press [EXEC]. If data already exists in the pattern, you'll receive a prompt. Press [Yes] to initialize, or [No] to cancel.

After initializing a pattern location, you're ready to make recording preparations.

Prep For Recording

1. Select the Pattern Real Time Record Page (Function 6/Page 1).

2. **PATTERN SELECT** - The parameter on the far left allows you to select any of the 100 patterns. Select the one you just initialized.

You can select a pattern that already contains data to edit or re-record the existing data.

3. **RESOLUTION** - Move the cursor to the Resolution parameter and select a record resolution. The values are represented in quarter note fractions (1/1 = quarter note, 1/2 = eighth note).

Like in Song Record, the resolution value sets the smallest beat division possible and corrects all notes played to the nearest selected beat division. Selecting a quarter-note resolution (1/1) means only quarter-note rhythms are possible (for a detailed explanation of record resolution, see *Resolution*, Chapter 6, Song Record/Real Time).

4. **METRONOME** - Turn the metronome click on/off.

5. **TEMPO** - Select a record tempo.

This value is a record tempo only because once a pattern is inserted into a Song, it accepts the Basic Tempo of that Song.

6. **MEASURE NUMBER** - This field monitors the current measure number.

The following two fields are used when editing existing data.

Real Time Record

After Preparing Your Environment:

1. Press [Rec] and listen to the tempo click. Change the tempo to a more comfortable recording rate, if necessary.

2. Press [Start/Stop] and recording begins immediately without a count-off. Don't play right away if you don't want to. You can wait until measure 1 comes around again.

The machine loops the length of the pattern until you press [Start/Stop] again. Every note you play is recorded; that means you can add notes on each pass and build the pattern one pass at a time.

You can change the resolution, tempo and metronome setting at any time during record. All notes you play after changing the resolution are affected; those already recorded are not.

3. When you want to stop recording, press [Start/Stop].

4. To play back, press [Start/Stop] without pressing [Rec] first.

If you make a mistake...

Erasing Data

Erasing or adding notes is done on the Pattern Real Time Record Page with the Add/Remove and Erase functions.

There are two ways to erase notes from a pattern. Individual pitches are erased with the Remove function and all sequence data is erased with Erase. In both cases, data is erased *while the sequencer is running.*

To Remove A Select Pitch:

1. Press [Rec] and [Start/Stop]. The [Add] and [Era] functions appear on the screen.

2. Press the [G] cursor to select ADD. Change the function to Remove with the [Up] key.

3. Play the pitch you want to erase on the keyboard. All occurrences of that pitch between the time you played the key and released it are erased. You'll still hear them while you hold the key, but on the next pass, the data is gone.

In this way you can erase a single note or full measure(s). All other pitches in the pattern are unaffected. Adjust the tempo down to make a precise edit.

This function is particularly useful in drum pattern recording where each key on the keyboard is a different drum sound.

4. Return to data record [Add] by pressing the [Down] key.

You can go back and forth between Remove and Add as often as you want without stopping the sequencer.

To Erase All Sequence Data:

1. Press [Rec] and then [Start/Stop]. The [ERA] function appears on the screen at the far right.

2. You'll make your edit by selecting [ERA] (equal rights erasing) as the sequencer plays. All notes that occur between the time you press the [H] cursor key and when you release it are erased.

3. Begin by setting the tempo to a comfortably slow tempo so you don't make a mistake.

4. Select [ERA] and all data that occurs while you hold the cursor key is erased. You'll still hear it while you hold the key but on the next pass, the data is erased.

To Overdub an Existing Pattern

To record new overdubs to an existing pattern, simply select the pattern number on the Pattern Real Time Record Page (Function 6/Page 1) and press [Rec] and [Start/Stop]. You'll hear all the current data played back as you add new data.

Pattern Record/Step Time

Step recording in Pattern Mode is exactly the same as step recording in Song Mode. The parameters are the same and the procedure is the same.

1. To record a new pattern, begin by Initializing a pattern location (see Initializing a Pattern above).

2. Select the Pattern Step Recording Page (Function 2/Page 2).

3. Select the pattern location you just initialized when recording a new pattern, or you can add data to a pattern already recorded. Any pattern number can be selected, so you can record part of the data in real time and part in step time.

4. Press [Rec], then [Start/Stop] and the step record display appears. This display is identical to Step Record in Song Mode.

5. Follow the guidelines covered in Chapter 10, Step Record.

At the end of the last measure, the pattern is looped around and overdubbing begins.

Get Pattern

Any section of data on a track that was recorded in Song Record can become a pattern using the Get Pattern function. This is a very handy feature because you can perform all your recording, editing and experimentation in Song record and then transfer the data you'll want to repeat into patterns to create the arrangement.

Many sequencer users find it easier to create a piece of music as a whole and then arrange the pieces in various order later instead of creating the componant parts first. This function allows you to do just that.

To Copy Data From A Track To A Pattern:

1. Decide what track and what region of data on that track you want to transfer into a pattern. Remember, it can't be longer than eight bars.

2. Initialize a new pattern location (Function 6/Page 3). Set the Beat value to correspond to the Song that data is taken from. Define the number of measures to be copied from the track by setting the length of the pattern.

3. Select the Get Pattern Page (Function 6/Page 4).

Parameters From The Left:

4. Select the Source Song number. Data can be taken from any song in the internal memory.

5. Select the Source Track Number.

6. Select the first measure to be copied. The length is defined by the set length of the destination pattern.

7. Select the destination pattern.

8. Press [EXEC]. If there's already data in the destination pattern you'll receive a prompt. Press [Yes] to continue, or [No] to cancel.

The copied data remains on the source track.

Once the data has been transferred to a pattern, it can be overdubbed in Real Time or Step Time record.

Editing Pattern Data

As discussed above, pattern data can be erased in Pattern Real Time Record with the Remove and Erase functions. Although convenient, these functions are basically crude forms of erase, easily accessed during the recording process.

The following list includes all editing functions and how they are applied to the pattern data:

Event Edit

To erase or edit individual MIDI events, select the Event Edit Page (Function 7/Page 1) and define the pattern number to edit. All event editing capability is available for patterns plus tracks.

Change the Length

The Pattern length can't be changed without reinitializing the pattern and destroying all recorded data in the process. It's possible to transfer the data to an empty track, make the edit and then transfer it back to the pattern:

To Insert Or Delete Measures:

1. Copy the Pattern data to an empty track with Copy Pattern (Function 5/Page 1). See Copy Pattern below.

2. Edit the data with Insert/Delete/Erase (Function 5/Page 3).

3. Reinitialize the pattern location to the new length (Function 6/Page 3).

4. Use Get Pattern (Function 6/Page 4) to transfer the data back to the pattern.

Quantize

Quantize can only be performed to track data and not pattern data. You can accomplish this edit by transferring the pattern data to an empty track, quantize and then transfer it back.

To Quantize Pattern Data:

1. Copy the Pattern data to an empty track with Copy Pattern (Function 5/Page 1).

2. Edit the data with Quantize (Function 5/Page 4).

3. Use Get Pattern (Function 6/Page 4) to transfer the data back to the pattern.

Sound Program/Transpose/Detune/Volume/Panning

When a pattern is inserted into a track, all track parameter assignments set on the Track Parameter Page (Function 4/Page 1) apply to the pattern data as well.

- Sound Program
- Volume
- Transpose

- Detune
- Panning

You can't adjust any of these parameters differently for an individual pattern within a track.

Copy Pattern

This function copies pattern data to the destination track, beginning at a specified measure number. This is most commonly used to edit the pattern data with functions that apply only to track data such as measure insert/delete and quantize.

To Copy Pattern Data to a Track:

1. Select Put/Copy Pattern Page (Function 5/Page 1).
2. Change the page function to (COPY) with the [Up] key.
3. Select the source pattern.
4. Select the destination track and the measure number the copied data begins on.
5. Select [EXEC]. If data exists on the destination track you'll receive a prompt. Press [Yes] to continue, or [No] to cancel.

Inputting Patterns to Tracks

Recorded patterns can be input on any track at any measure of any song as long as a the destination measures are free from performance data or another pattern. A pattern can't occupy a measure or measures already containing performance or pattern data.

Patterns can exist side by side on the same track, and performance data can precede or follow a pattern.

Pattern 09	**Track Data**	**Pattern 12**	**Pattern 09**

To Input A Pattern Into A Track:

1. Select the Put/Copy Pattern Page (Function 5/Page 1).

2. The Input function is already selected, so move the cursor to the source pattern field and select the pattern number.

3. Select the destination track and first measure.

4. Press [EXEC]. If there's already data on the destination track at the measure specified, the data is replaced in favor of the new pattern, for the entire length of the pattern.

If the Beat value of the pattern and the song don't correspond, the pattern can't be input.

Summary

This chapter covered all aspects of pattern record, edit and application in a track. Remember that using a pattern over and over again requires no additional memory because it's recorded only once.

Use Patterns whenever possible to make the most efficient use of the limited memory in your M1.

Chapter 12

Non-Note Data Background

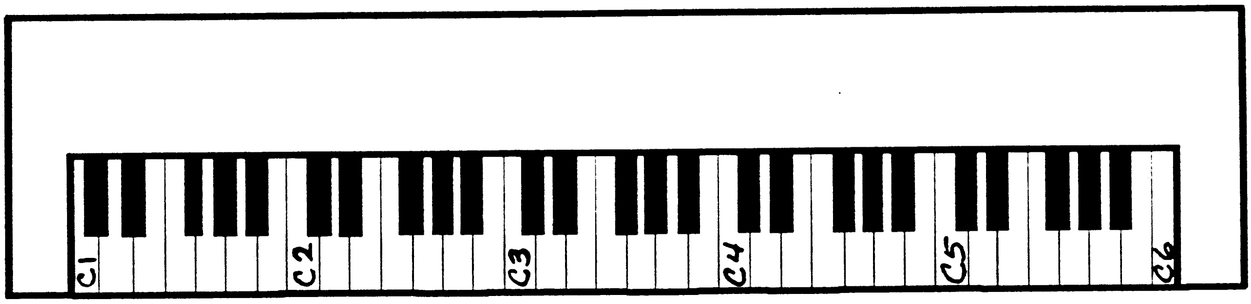
This chapter is the first of three that discuss MIDI in greater detail. It's a preamble to the subject of MIDI event editing, or the manipulation of individual MIDI messages. These messages are divided into two types, *Note and Non-Note Data*. We'll take a close look at both types before discussing how to send and record non-note data in the next chapter.

Note Data

Whenever you play a note on a MIDI keyboard, it sends the corresponding MIDI note number to the receiver, be it a sequencer, another keyboard or whatever. Every note has a different number from 0 - 127, and it's this number that differentiates one note form another in the MIDI language. This is called *Note Data.*

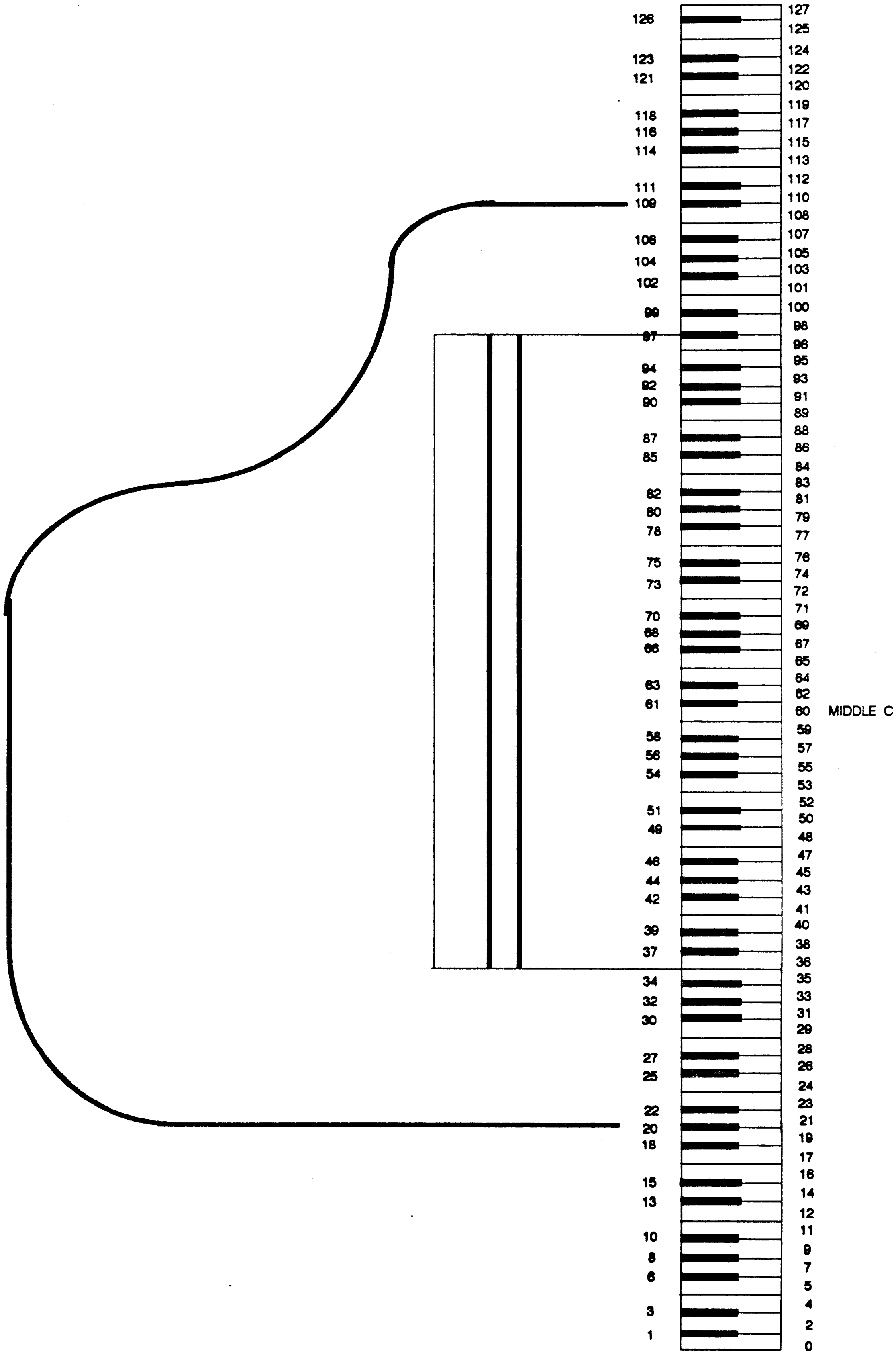
Pitches are commonly listed by both their name and number. For example, middle C is C3 60. The B just below middle C is B2 59 and the D above middle C is D3 61.

Please see next page for diagram.



The diagram on the following page shows the MIDI pitch range in comparison to the 88-note piano keyboard and the five-octave keyboard on your M1.

See example on next page.


MIDDLE C

MIDI communicates much more than just the notes you play. In fact, everything you can physically do from the controls of a keyboard is communicated through MIDI. This includes: depressing the *Sustain Pedal*, adjusting the *Pitch Bend and Modulation with the Joystick*, changing a sound program *(Program Changes)* and changing the *Volume*.

These types of messages are completely separate from the Note Data and are included in the whole heading *Non-note Data*.

Non-Note Data

Non-note data, like note data, is *sent and received on individual MIDI channels* so the commands can be directed to specific receiving sound modules. Because it's a separate data type, it can be recorded and manipulated in the sequencer without affecting the surrounding note data.

Non-note data is not just separate from note data as a whole, but *each individual type of non-note data is separate from another type of non-note data.* This means it's possible to record and edit volume, sustain pedal commands, pitch bends or program changes, etc., individually.

Control Changes

Many of the non-note data types are included under a general subheading called *Control Change.* Within this general heading there are 128 different control change numbers, each one representing a different controller such as the sustain pedal or volume control. Presently, there are not 128 controllers in use, so most of these control change numbers are currently undefined, providing the room to grow as technology advances. The numbers that are implemented which apply to all machines equipped with MIDI are listed on the next page.

Control Change Chart

Control change numbers currently defined by the MIDI specification document and their numbers:

0	Undefined
1	Modulation Wheel/Lever
2	Breath Controller/Filter Modulation
4	Foot Controller
5	Portamento Time
6	Data Entry
7	Volume
8-31	Currently Unused
32-63	LSB (Least Significant Byte) for values 0 to 31
64	Sustain Pedal
65	Portamento
66	Sostenuto
67	Soft Pedal
68-95	Unused
96	Data Increment
97	Data Decrement
98	Unused
100	LSB For Master Tune Value
101	MSB For Master Tune
122-127	Channel Mode Messages

The Control Change numbers that apply to the M1 are listed on the MIDI Implementation Chart located on page 111 of your owner's manual.

Take a look at the chart and you'll see every data type listed (note and non-note) and how the M1 responds to these types.

You'll find the Control Change section in the middle of the chart. The assigned control change numbers are in the left-hand column and their names in the far right column. The numbers are important because that's how these different controllers are identified on the Event Edit display of the M1.

Controllers Explained

The controllers that appear on the M1 Implementation Chart are listed below, each accompanied by a brief explanation. The particular M1 controllers that send these control changes are mentioned, but for a full explanation of how to send and record them, see Chapter 14.

Modulation (Control Change number 1 - CC #1) - All information sent from the Joystick when pulled toward you is on CC #1. This controls a modulation effect of pitch which produces vibrato.

Filter Modulation (CC #2) - Pushing the Joystick away from you engages a modulation of the filter, producing a wah-wah effect. This message is carried on Control Change number 2.

Data Entry (MSB) (CC #6) - When System Exclusive is engaged (see System Exclusive, later this chapter), parameter values are adjusted with the Data Slider or the [Up/Down] buttons. When you make a parameter value change with the *Data Slider*, this control change number carries a preparatory command preceding the actual value message (sent on CC#38). You don't have to be concerned with this minute detail very often and most likely never; however, I'd be remiss if I didn't include here.

Volume (CC #7) - MIDI Volume change commands are carried on Control Change number 7. MIDI Volume is not sent from the Volume Slider, but from a *continuous controller pedal* connected to the Assignable Pedal Jack on the rear panel. MIDI Volume commands are also sent by adjusting one of the three Volume change parameters in Sequencer Mode.

Data Entry (LSB) (CC #38) - This control change number carries the actual parameter values sent by the Data Slider when System Exclusive is engaged.

Sustain (CC #64) - Sustain Pedal commands are sent from a pedal connected to the Damper jack on the rear panel of your M1. They are carried by control change number 64.

Data Increment (CC #96) - When System Exclusive is engaged, parameter value increases made by the [Up] key are carried on this control change number.

Data Decrement (CC #97) - When System Exclusive is engaged, parameter value decreases made by the [Down] key are carried by this control change number.

NOTE: You rarely need to address the Data Entry or Data Increment/Decrement control change numbers. They are included here as part of the complete listing only. Attend mainly to the common control change functions -- Pitch Modulation, Filter Modulation, Volume and Sustain.

Master Tune (CC #100-101) - The M1 can receive commands to change its Master Tune setting, but can't send them. This means you can record a Master Tune command onto the sequencer from an external controller capable of sending such a command, but not from the M1 itself.

The Control Change numbers carry only some of the non-note data types. The remaining types each have their own MIDI listing.

Program Changes

Whenever you select a different sound program on your keyboard, you're sending a MIDI program change command. If you have slave devices in your setup, you can test this by simply making different selections from the M1.

- Put the M1 in regular Program Mode and set the Global MIDI Channel to correspond with a slave device in your studio (Global Mode/Function 5/Page 1). Select the first sound program on the M1 - I00; the slave responds by calling up its first sound program. When you select the fifth sound program on the M1 - I04, the slave calls up its fifth sound.

MIDI Program change numbers are common for all MIDI instruments and they number from 1 - 128. Program change number 1 always calls up the first patch on the machine. Since all machines are different and have varying numbering schemes assigned to their sound programs, I've included a chart below that helps you translate the MIDI program change number to three of the main keyboard manufacturers indexes.

Program Change Chart

MIDI #	Roland	Yamaha	Korg M1
1 - 8	11 - 18	1 - 8	I00 - 07
9 - 16	21 - 28	9 - 16	I08 - 15
17 - 24	31 - 38	17 - 24	I16 - 23
25 - 32	41 - 48	25 - 32	I24 - 31
33 - 40	51 - 58	cart.1 - 8	I32 - 39
41 - 48	61 - 68	9 - 16	I40 - 47
49 - 56	71 - 78	17 - 24	I48 - 55
57 - 64	81 - 88	25 - 32	I56 - 63

- *The Korg M1 responds to MIDI program change numbers greater than 100 by calling up patches from the beginning again starting with I00.*
- *Yamaha Instruments respond to MIDI program change numbers greater than 32 by calling up programs on cartridge.*
- *Roland instruments respond to MIDI numbers greater than 64 by calling up programs on cartridge.*

Pitch Bends

Pitch bending has been part of synthesizer technique since the first commercial machine was produced 20 years ago by Robert Moog. It adds to the expressive quality of the synth in much the same way an electric guitar or saxophone expresses its singing style.

Every time you adjust the Joystick to the left or the right, the M1 sends a MIDI pitch bend command.

Touch Control

Velocity and Aftertouch are relatively recent developments in electronic keyboards. They give an electric piano or synthesizer the ability to change its sound with regard to your playing style.

Velocity

Velocity sensitivity controls the sound by how much force you use playing the keys. On a piano when you play harder, the sound gets louder and the tone changes a bit. Playing with a lighter touch produces a softer, mellower tone.

On a synthesizer, you can program the results of forceful and light playing. Sometimes a sound gets brighter without getting louder or vice versa. Other times you might not get any response to your playing style at all. It's all up to the programmer. Most of the time the results are much like those on the piano: forceful playing produces a louder, brighter sound and light playing produces just the opposite.

MIDI Velocity messages range from 1-127, smaller values representing a lighter touch. By adjusting velocity values in the M1's event edit mode, you can control a performance's touch sensitivity without disturbing the notes.

Aftertouch

Aftertouch, or Pressure, measures how strongly you press the keys after you've initially struck them. If you play a note and then press down harder without releasing the key, that's Aftertouch. Like Velocity, a sound module can respond in a variety of ways to Pressure control. The sound can get brighter, or louder; you might hear a vibrato come in, or maybe a combination of all three.

Aftertouch messages range in value from 0-127, smaller values representing less pressure. These values can be adjusted in event edit mode, but it's less common to do so because there can be hundreds of them in one beat alone. They can be thinned out or eliminated altogether to conserve valuable memory space (see Chapter 13).

System Exclusive

System Exclusive data is a separate form of non-note data that can be sent and received only by machines of the same *make and model.* An M1 can send and receive System Exclusive with another M1 *only* and no other machine regardless of the manufacturer. The reason is that System Exclusive carries sound program parameter values, and every synthesizer has a different operating system of parameters and value degrees. To enable this system to work, when System Exclusive is sent it carries an identification code that is accepted only by machines of like kind and ignored by all others.

System Exclusive can be used to transfer sound programs to and from another M1, to a computer for storage purposes (see Chapter 4, Data Management) or to a sequencer as part of the performance data. The last application is particularly exciting, because the actual timbre of a sound program can change dramatically during the performance. Although the M1 can send and receive system exclusive in Program Mode, the M1 sequencer does not and so it's impossible to record sound parameter changes onto the sequencer.

Chapter 13

MIDI Parameters/Recording Non-Note Data

The first half of this chapter talks about MIDI filtering -- how and why. The second half details the methods to send and record the various non-note data types from the controls of the M1 or, when necessary, an external MIDI controller.

MIDI Filtering

Most sequencers are equipped with some form of MIDI filtering facility, used primarily to conserve memory by filtering out unnecessary messages that would otherwise consume valuable space. Sometimes you'll find a long and confusing list of data types to select from, but the M1 has condensed this list to just four types, typically filtered at one time or another.

- Program Change Commands
- Aftertouch
- Control Change Commands (all 128)
- System Exclusive Messages

You'll find all four on the MIDI Filtering Page in Global Mode (Function 5/Page 2). There are two values for each message type:

- **ENA** = The selected MIDI messages are both sent and received by the M1 *in all modes.*
- **DIS** = The selected MIDI messages are neither sent nor received by the M1 *in all modes.*

NOTE: These parameter values affect the M1 as a whole, and all tracks on the sequencer comply. You can't disable MIDI messages on selected tracks while others are enabled; all are affected.

Filtering Program Change Commands

Program change commands are generally desired, particularly when you're using the M1 sequencer. When disabled, the M1 neither sends nor receives program changes commands, so an external sound module doesn't receive recorded program changes during playback. When enabled, program change commands are both sent and received.

You might want to disable program changes if you're using different sound modules for playback than those you recorded with. If programs in the new modules don't correspond with those in the former, the program changes you recorded only call up the wrong sounds.

To Filter Program Change Commands:

1. Press the [Global] button.
2. Select the MIDI Filtering Page (Function 5/Page 2).
3. Select the Program Change parameter with the [B] cursor key and set it to Enable (ENA) or Disable (DIS).

NOTE: If external sound modules aren't responding to intended program changes, it's likely that they are being filtered by the M1. When this arises check the Program Change parameter to make sure it's set to Enable.

Filtering Aftertouch

Aftertouch messages are notorious for consuming an inordinate amount of sequencer memory. Many older sound modules are not equipped with touch response and can't respond to aftertouch at all. Those that can (the M1 included) often have many sound programs preset not to respond to aftertouch. In such cases, a lot of memory is wasted unnecessarily and so aftertouch messages can be filtered to conserve the limited memory in the sequencer.

When set to disable, aftertouch is neither sent nor received and the sequencer does not record it. It's recommended that you leave Aftertouch set to disable, and only enable it when needed.

To Filter Aftertouch Messages:

1. Press the [Global] button.

2. Select the MIDI Filtering Page (Function 5/Page 2).

3. Select the Aftertouch parameter with the [D] cursor key and set it to Enable (ENA) or Disable (DIS).

Filtering Control Change Commands

All defined control change numbers are included in this filtering parameter. This means if you want to filter volume changes you're going to filter sustain pedal and modulation commands as well. This can be desired when the playback sound modules are different from those you recorded on. If the new sound modules are responding in a bizarre fashion to modulation messages, for example, disable the control change parameter.

Ordinarily, leave Control Changes set to Enable.

To Filter Control Changes:

1. Press the [Global] button.

2. Select the MIDI Filtering Page (Function 5/Page 2).

3. Select the Control Change parameter with the [F] cursor key and set it to Enable (ENA) or Disable (DIS).

Filtering System Exclusive

System Exclusive is used as you might expect, exclusively, to transfer sound parameter values. At all other times, System Exclusive should be set to disable to avoid the confusion caused by sending Sys Ex to an external sound module or receiving an alien message from a foreign device.

To Filter System Exclusive Messages:

1. Press the [Global] button.

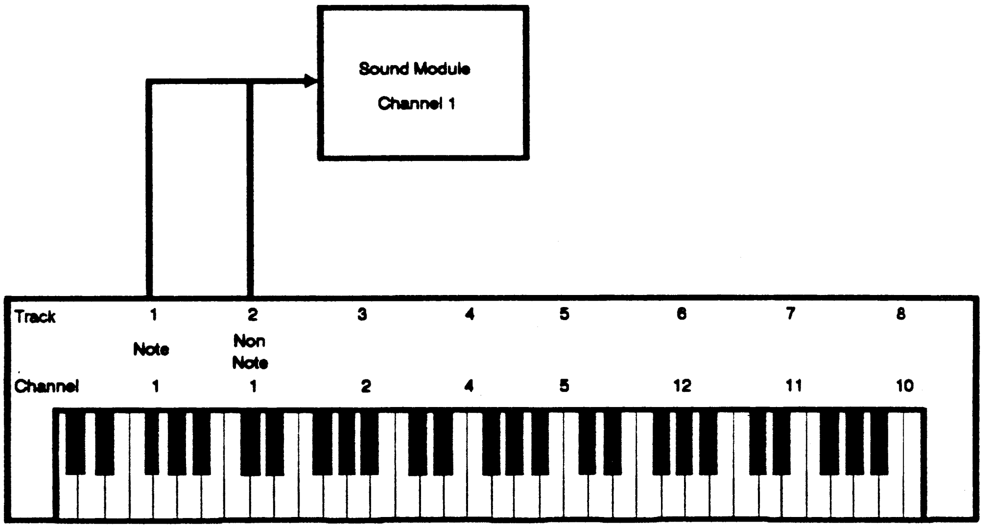
2. Select the MIDI Filtering Page (Function 5/Page 2).

3. Select the System Exclusive parameter with the [H] cursor key and set it to Enable (ENA) or Disable (DIS).

Sending & Recording Non-Note Data

Non-note data can be recorded while you play a note performance or separately onto another track. Either way, the controller you use to send the commands to the sequencer is the same. Each non-note data type is sent from a different controller on your M1. For instance, pitch bends are sent from the Joystick when you move it left or right, while sustain pedal messages are sent by depressing a switch pedal connected to the Damper Jack.

If non-note data is recorded on a separate track, the MIDI channel assigned to that track directs it to the receiving sound module or sound program. Assign the non-note data track to the same channel as the corresponding note data track.



In this way, the performance sounds as if it were recorded all at once even though it wasn't.

Listed below are each non-note data type and the method you use to control it. To record the data, all you do is manipulate the suggested controller while the sequencer is recording.

Sustain Pedal Commands

1. First make sure that Control Changes are Enabled on the MIDI Filtering Page.

2. Connect a switch pedal to the Damper Jack on the rear panel of the M1. Once connected, each time you depress the pedal a MIDI sustain pedal command (carried by control change number 64) is sent on the current channel.

3. If you depress the pedal while playing the keyboard, the sustain pedal commands are recorded along with the notes on the same MIDI channel.

Volume Changes

Make sure that Control Changes are Enabled on the MIDI Filtering Page.

There are two ways to send and record volume changes on the M1:

With a Continuous Controller Pedal:

1. Connect a continuous controller pedal to one of the Assignable Pedal Jacks on the rear panel of the M1.

2. Press the [Global] button and select the Pedal Assign Page (Function 2/Page 2). Set the pedal assignment to VOLUME. Now when you adjust the pedal, the M1 sends MIDI volume commands.

3. You can monitor these changes from the Record/Play screen in sequencer mode. Adjust the pedal and watch the value in the Volume field change. If you manipulate the pedal while playing the keyboard as the sequencer records, volume changes are recorded along with the notes.

With the Data Slider:

You can send and record volume changes without the use of a pedal from the main Record/Play display:

1. Adjusting the volume value with the Data Slider or [Up/Down] keys sends MIDI volume commands on the channel assigned to the selected Record Track.

2. To record volume commands with the Data Slider or [Up/Down] keys, start the sequencer recording and then move the cursor to the volume field of the display. All adjustments you make are recorded onto the track.

Program Changes

1. Make sure that Program Changes are set to Enable on the MIDI Filtering Page.

2. Program Changes are sent whenever a sound program is selected on the M1, either from regular Program Mode or from three separate Pages in Sequencer Mode:

    - Record/Play Page (Function 0/Page 1)
    - Track Program Page Function 1/Page 1)
    - Track Parameter Page (Function 4/Page 1).

External sound modules receiving the same MIDI channel as assigned to the selected Record Track responds when sound programs are selected on *any of these three sequencer mode pages mentioned.*

There are two ways to record program changes on the M1.

In Real Time

1. Select the Record/Play Page and start the sequencer recording.

2. Move the cursor to the Program field. Any changes you make are recorded as MIDI Program changes onto the Record Track.

This method won't work unless the sound programs you want to record are in adjoining locations. You can't select specific program numbers, but must scroll to the one you want.

In Event Edit

1. Input program changes in Event Edit Mode at specific clock pulse points (see Chapter 14, Event Edit.) This method is the most precise and easiest to use.

NOTE: A sound module can't play a note and make a program change at the same time. Program changes must be made during gaps in the music. This is easiest to accomplish by inserting events in Event Edit Mode (see Chapter 14). If the space between the notes preceding the change and the notes following it is a small one, you may find the sweet spot a bit elusive. You have to tread a thin line between them so you don't cut off the ringing of the previous notes, but still make the change quick enough so it's completed by the time the next notes come in. Sometimes it can be very tricky, especially if you're working with a sound that rings out after you release the keys.

Summary

We've covered a lot of ground in this chapter but there are only two things that really sum up all this information:

- Non-note data can be recorded separately onto tracks of the sequencer just like note data can.
- Non-note data is sent on individual MIDI channels, just like note data, and therefore can be sent to specific slave devices.

Chapter 14

MIDI Event Editing

Each individual MIDI event, from single notes to controller commands such as volume changes, sustain pedal messages and pitch bend information can be addressed and edited. This kind of detailed control provides you with an unlimited amount of flexibility when it comes to hearing exactly what you want to hear in a recording.

This sounds like it takes a lot of high tech voodoo to accomplish, but it's really quite easy.

Reading the Event Edit Display

Begin by becoming familiar with the Event Edit display.

1. Select a Song with data recorded in it. Record some data on a track if you need to. It doesn't have to sound great -- all you're going to do is examine it.

2. Select the Event Edit Page (Function 7/Page 1). You'll see two parameters:

- (Track or Pattern) - Select what you want to work with, a Track or a Pattern.
- Track Or Pattern Number - Select the Track or Pattern number you want to edit.

3. After selecting the Track or Pattern number, press [Rec] and it lights; then press [Start/Stop] and the Event Edit display comes up on the screen.

Each field is explained below from left to right.

Measure

On the far left is the measure number. You can view or edit MIDI events in the selected measure only. To reach another measure, select the Measure Field and specify the number.

Index

Each current MIDI event is indexed from #001 in the order of its occurrence in the measure. To scroll from event to event, select the Index field and use the [Up/Down] keys or the Data Slider.

Location

The location is listed by Beat and Clock Pulse. The smallest division of a beat is the clock pulse. Many sequencers, including the M1, divide the quarter-note beat into 48 clock pulses. That's 48 clock pulses per quarter note; that means everything you play is automatically quantized to the nearest 192nd note beat division (strictly speaking, that's a 128th-note triplet). This is such a fine resolution that what you hear played back is exactly as you played it.

Event Type

The Event Type field displays data event types one at a time from the following list:

- **Note Data** - Note events are recognized by their note names C -1 to G 9 (see Chapter 13).
- **BEND** - Pitch Bend events
- **AFTT** - Aftertouch events
- **PROG** - Program Change events

- **CTRL** - All Control Change functions are lumped together under this heading and are listed individually by the control change number that appears in the field to the right (see Chapter 13 for details on control change).

Value Field

This field displays values relating to the current data type shown in the Event Type field. If a note event is shown in the Event Type field, the Value field displays a *Velocity value.*

The chart below lists the event types and the corresponding Value field information:

Event Type	What The Value Field Displays
Note	(C-1 to G9)Velocity
BEND	- 8192 to 8191
AFTT	0 - 127
PROG	I00-I99/C00-C99
CTRL	0 - 108 (Controller number)

NOTE: It's unusual that the Program Change value is listed by M1 sound program locations. All other sequencers list the MIDI program change numbers 1 - 128. For a translation of M1 sound program locations to the corresponding MIDI numbers, see Chapter 13 under Program Change.

Length & Control Change Value Field

The field to the right of the Value field displays the note length (duration) in *Beats and Clock Pulses* when the event type is a note event. If the note extends past the end of the measure, TIE appears to the right of the duration value.

If the current event type is CTRL, this field displays the controller value.

A Word About Controller Events

When a control change event is shown, the Event Type field displays CTRL, the Value field displays the particular controller number (for example, #064 for sustain pedal), and the Length field displays the event value.

Continuous controllers such as volume and modulation range in value from 0 - 127.

Switch controllers such as sustain pedal have just two possible values - 0 for OFF and 127 for ON.

Editing a MIDI Event

Once the MIDI event types are understood and the Event Edit display is translated, editing a MIDI event is easy.

The primary purpose of Event Edit Mode is to manipulate individual MIDI events displayed on the screen. You can choose to:

- Change an event (its type or value)
- Move an event to another location
- Delete an event
- Insert an event

NOTE: Delete and Insert do not change the length of the track in Event Edit Mode as these functions do in Measure Edit, nor do events following a deleted or inserted event move.

Changing an Event

To change an event all you need to do is select the parameter field you want to change, then make a value change with the [Up/Down] keys or the Data Slider.

- Any note event can be adjusted by moving the cursor to the note name field to correct misplayed notes individually.
- Change the Velocity value of a note to make it come out louder or softer.
- Change the duration value to alter the articulation.
- Change a Program Change number so that the sequencer calls up another sound from the sound module.

These are just some of the edits you can make in event edit mode. With this capability you have control over the smallest elements of your recording.

NOTE: Once you make a value change, it's in the memory.

Move an Event to Another Location

- Move an event to any Beat and Clock Pulse you want by moving the cursor to the Location field and with the [Up/Down] keys or Data Slider to make a change.

Here's a chart that shows you what clock pulse times common note values fall.

How to Use This Chart:

Each Clock Pulse value listed represents the number of clock pulses within a given note value and the Location value tells you where these rhythms occur in a measure.

Note Value	Clock Pulses	Location Values
1/2 Note	96	1:/3:
1/2 Triplet	64	1:/2:16/3:32
1/4 Note	48	1:/2:/3:/4:
1/4 Triplet	32	1:/1:32/2:16/3:/3:32/4:16
1/8 Note	24	1:/1:24/2:/2:24/3: etc
1/8 Triplet	16	1:/1:16/1:32/2:/2:16/2:32/3: etc
1/16 Note	12	1:/1:12/1:24/1:36/1:48/2: etc
1/16 triplet	8	1:/1:08/1:16/1:24//1:32/1:40/2: etc
1/32nd Note	6	1:/1:06/1:12/1:18 /1:24 etc
1/32nd Triplet	4	1:/1:04/1:08/1:12/1:16 etc
1/64th Note	3	1:/1:03/1:06/1:09/1:12 etc
1/64th Triplet	2	1:/1:02/1:04/1:06/1:08 etc

Changing the location value automatically places the event in the new location in the memory.

Delete an Event

Deleting an event is the same as erasing it. Delete doesn't change the length of the measure or track as a whole; it simply removes the event from the track.

To delete an event, select the event on the display and then select [DEL]. When you do, the event is removed and the event following the deleted event is shown on the display.

Insert an Event

Inserting an event adds the event to the measure at the location you select. It doesn't lengthen the measure or track overall, but simply places a new event in the measure.

To Insert and Event:

1. Select [INS] on the display and the current event is inserted at the current location. Now, you adjust the parameters to define the event type, value and location.

2. Move the cursor to the Event Type field and select the data type you want to insert.

   - Note (specify the pitch)
   - Pitch Bend
   - Aftertouch
   - Controller
   - Program change

3. Move to the Value field and select:

   - Velocity - for note data.
   - Bend value
   - Aftertouch value (from 0 - 127)
   - Controller number (from the control change chart, Chapter 13)
   - Program Change number (from 1-128)

4. Move to the Length field and select the note duration for note data or the controller value for control data.

5. Move to the location field and place the event in the measure (use the Location Chart on previous page.)

Chapter 15

Syncing Up & Rhythm

In most of today's studio situations, there are many machines all working together to provide the sounds eventually laid down to tape. Timing can be a problem when working with a variety of machines in the same way it is when several musicians all get together and play as an ensemble.

Take the symphony orchestra, for example. If every player was given the freedom to express the music as an individual, the result would be chaos and confusion. The only way all the individual players can think and feel the music as an ensemble is by watching the conductor.

The same goes for MIDI machines. It's simple to hook up a sequencer to several sound modules and expect them to all play together. Sound modules don't have the capability to determine the tempo, or when to start and stop the recording. But if you include a drum machine or another sequencer in the picture, you've got a situation that needs a conductor.

The solution to this problem is MIDI Clock. Just as note and non-note information is sent from master to slave, MIDI clock messages are sent from master to slave to control such functions as tempo and start/stop. The relationship is the same as with other types of MIDI data transmission--there's one master and a slave or slaves.

When two or more MIDI devices are sending and receiving MIDI clock messages, they are *in SYNC*. All tempo adjustments made on the master are followed by the slave. When you start the master, the slave starts too, and when the master is stopped, the slave stops.

Song Position Pointer (SPP) is an added feature that sends measure numbers plus basic clock information. If both the master and slave are equipped with SPP, you can start playback from any measure in the song from the master and the slave follows. If one or the other is not equipped, this function is not available. In other words, Song Position Pointer only works when both the master and the slave are so equipped.

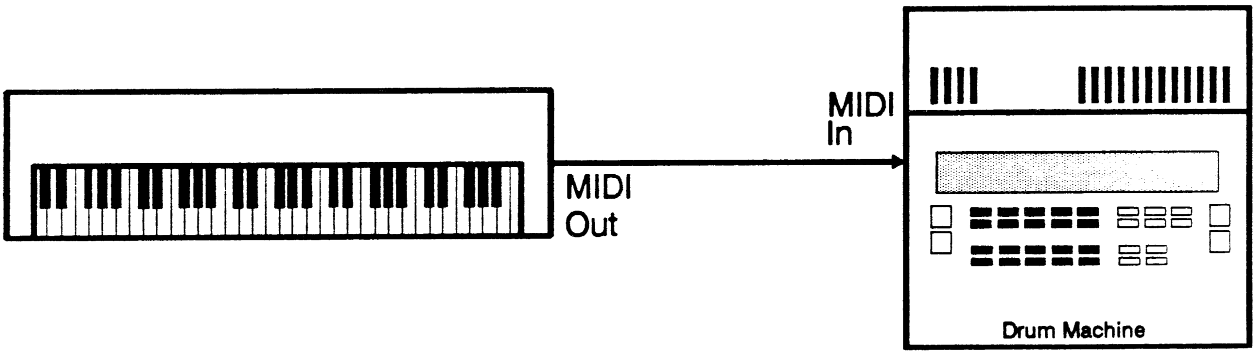
Syncing Up The M1 Thru MIDI

The M1 can control the tempo by sending a MIDI clock to an outside MIDI device, or follow tempo by receiving an external clock from an outside MIDI device.

The M1 as the Master

Sync up an outside MIDI device to the M1:

1. Hook up the M1 as the controller:



2. Set the outside MIDI device to External or MIDI Clock (check its owner's manual).

3. Press Start on the slave device. It won't start, but now waits for a signal to start from the M1.

4. Press [Start/Stop] on the M1 and the outside MIDI device follows. All tempo variations conducted by the M1 are transferred to the slave.
5. When you press [Start/Stop] again on the M1, both machines stop simultaneously.

6. If you start from where you left off, the slave generally follows, even if it's not equipped with SPP. Sometimes the slave automatically goes back to the beginning; it depends on your slave unit.

If The Slave Unit Is Also Equipped With SPP:

a) Select any measure in the song and wait a brief moment for the slave device to adjust. Press [Start/Stop] and both machines begin playback at the selected measure.

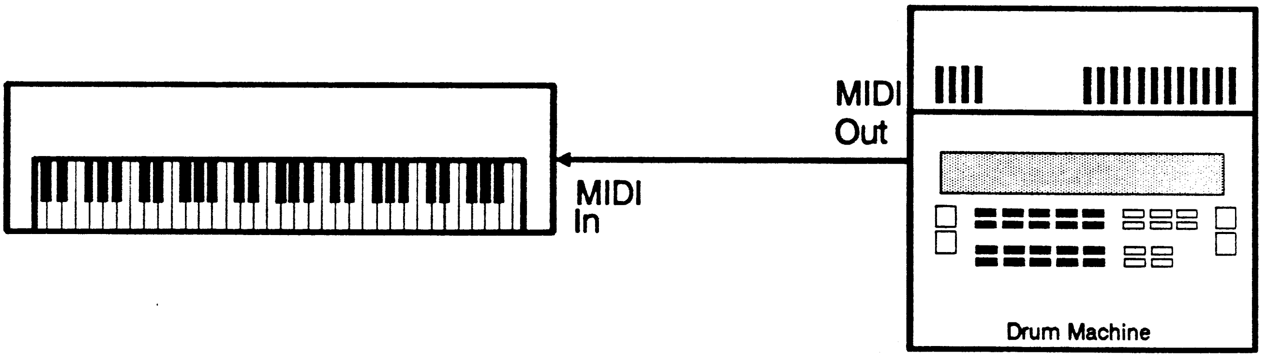
b) If the slave is capable of receiving a Song Select command, it follows a song selection made on the M1. In this way you can program a song order in Chain Play on the M1 and the drum machine or sequencer slave device follows its every move.

NOTE: You can use this method to sync up several drum machines and/or sequencers for live performance applications.

The M1 As The Slave

Sync the M1 to an outside MIDI device:

1. Hook up the M1 as a slave to the outside MIDI device:



2. Set the M1 to receive a MIDI clock from a controlling device by pressing the [Global] button and selecting the MIDI Global Page (Function 5/Page 1). Set the Clock value to EXT.

3. Press START on controller device and the M1 starts as well.

4. Press STOP on the controller device and the M1 stops too.

5. If you stop the controller and restart from the middle of a piece, the M1 follows. Set the controller back to the beginning, and the M1 restarts from the beginning.

If The Controller Device Is Equipped With SPP:

a) Select any measure on the controller device and wait a moment for the M1 to select the same measure. Start the controller and both machines begin playback at the selected measure.

b) If the controller is capable of sending a Song Select command, the M1 follows any song selection made.

The M1 With a Tape Sync Device

We've been discussing the method by which MIDI machines sync to each other, so what happens when you want to bring some *live sounds* into the act, like vocals, guitar, horns etc?

As you know, these sounds can't be recorded on a sequencer, so we're still stuck with the trusty tape machine to record them. Let's say you have a four-track tape machine and you want to add a guitar track and two vocal tracks to a song that you wrote and arranged on the sequencer. You could put all the sequenced parts on the remaining track and then sing along with them, but that would mean all the keyboard sounds and the drum machine would be on one mono track with no way of controlling the mix.

Ideally, you want to keep as many parts as possible that can be played by the sequencer off tape until you're ready for the final mix. In this way, the master mix is as clean and free of fidelity loss as possible (the sequenced parts are playing directly onto the master). This means that you don't actually record the sequenced parts until after you've already laid down the live tracks onto the multitrack.

So how do you get the sequencer to play along with the vocal/guitar tape? If you had the sequencer running while you recorded the live tracks, you'd be hard pressed to start it at the same instant each time, let alone get everything together for the final mix.

Enter Tape Sync!

The M1 is not itself equipped with a sync-to-tape function, but tape sync devices are available at affordable cost that enable you to sync the M1 to tracks on a tape.

Sync the M1 to Tape

Tape sync is a high-pitched tone that the tape sync device records onto one track of a multitrack deck. After laying the tone down, the M1 sequencer can sync to it, accepting start/stop and tempo commands. The tape sync tone becomes the conductor and the sequencer is the slave.

Tape Sync requires that you have a multitrack tape deck because the sync tone requires one track. A simple four-track cassette deck will do.

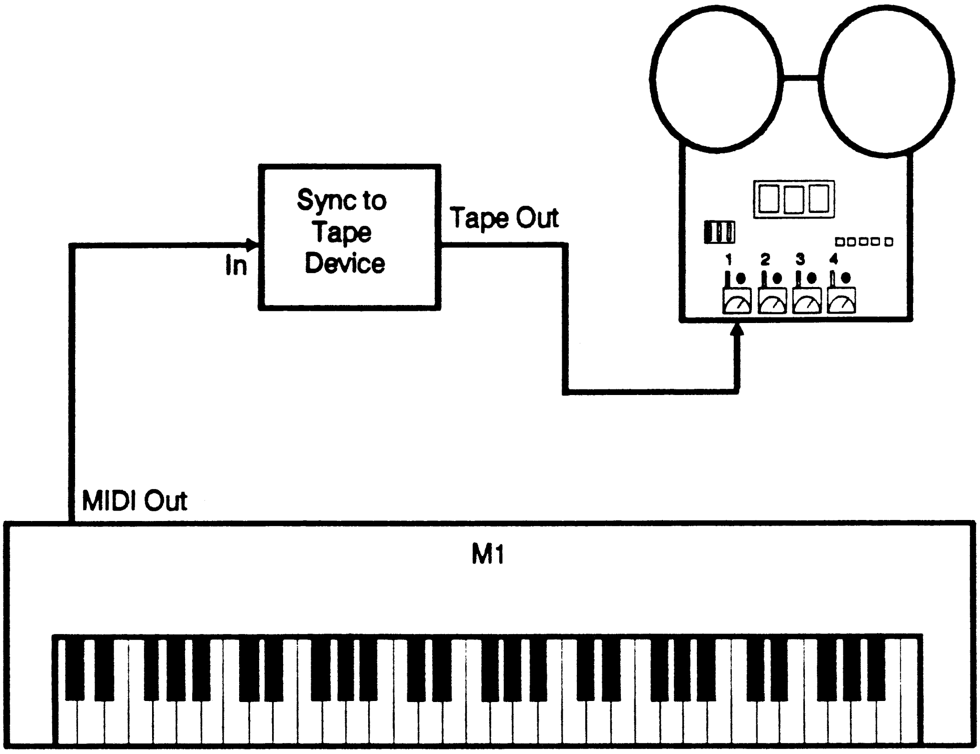
1. Connect the TAPE OUT jack on your tape sync device to one channel of your multitrack deck. It's best to record the sync tone on an outside track (1 or 4 on a four-track, 1 or 8 on an eight-track, etc.).

2. Once the connection has been made, the sync tone begins sending. Adjust the input level to -3 db on semi-pro gear and -10 db on professional equipment.

3. Don't use Noise Reduction or EQ on the sync tone.

4. Now, connect your M1 to the tape sync device this way:

See example on next page.



5. Make sure the tempo is set on the M1. Once the sync tone has been laid down, the tempo can't be changed without recording another sync tone.

6. Start rolling tape and give it about 5 seconds before you press [Start/Stop] on the M1. If you're monitoring the sound, the tone changes in frequency when you start the M1.

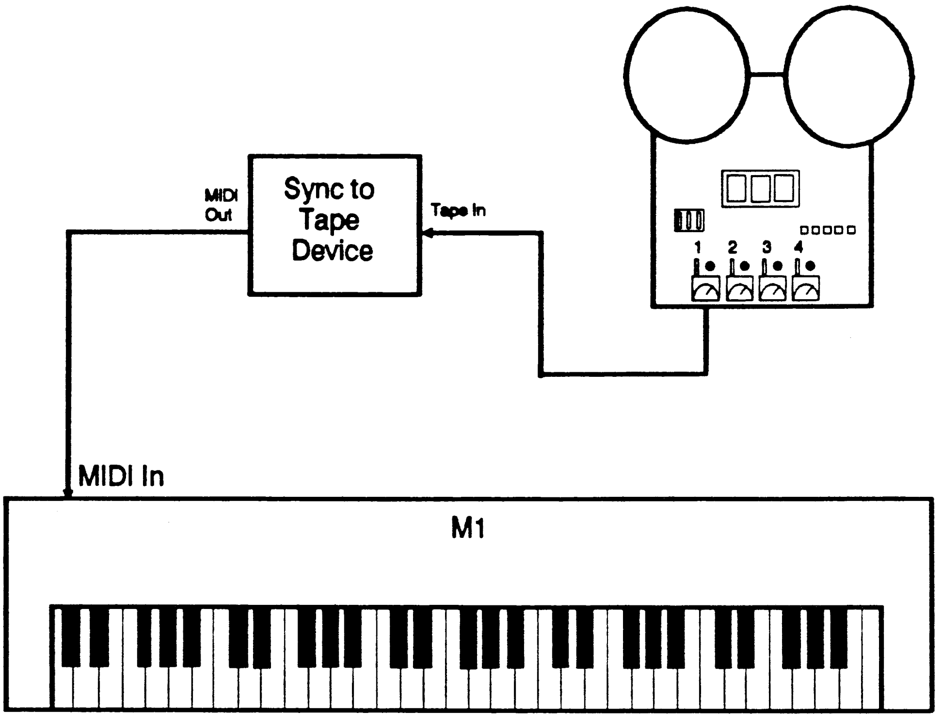
7., All programmed tempo changes become part of the sync track's tempo.

8. When the song is finished, the M1 stops.

Now, Sync The M1 To The Tone You Just Laid On Tape.

1. Connect the sync tone track output on your tape machine to the TAPE IN jack on your tape sync device.

See example on next page.



2. Set the M1 to receive an external MIDI Clock by pressing the [Global] button, selecting the MIDI Global Page (Function 5/Page 1) and setting the Clock parameter to EXT.

3. Rewind the tape and play it back. After the leader tone, the M1 starts. You can record tracks on the sequencer by pressing [Rec] before starting the tape machine.

4. Don't record any high-frequency instruments on the track adjoining the sync tone (cymbals, bells, etc.). Also, avoid instruments that are high in transients (high to low in volume), like a kick drum, on the adjoining track.

NOTE: You must always start the tape at the beginning of the sync tone. Starting in the middle of the track only starts the M1 from wherever it's currently set.

NOTE: Different machines lay down different sync-to-tape timing codes. Your tape sync device can't read a sync tone laid down by a device of another make and model. It can read the sync tone laid down by another device of the same make and model, however.

Recording Rhythm

Rhythm parts in today's music are more important to the style than ever before. So (or perhaps the cause), drum machines are everywhere, from simple rhythm boxes costing only a few hundred dollars to elaborate studio instruments costing a few thousand.

The M1 is equipped with some of the best drum sounds available anywhere, making its workstation capability as complete as any such machine on the market. Recording rhythm is made even easier with pattern recording techniques, and those of you already familiar with drum machine programming feel right at home.

This section doesn't detail every aspect of rhythm recording on the M1. That's the subject of Paul Goldfield's *Recording Syncing and Synths* available from Alexander Publishing. Here the basic issues are discussed, and some time-saving tips are offered as start-up material. If you want to experiment further, pick up the *M1 - Drum Pattern Handbook* by David Crigger from your dealer.

Two Methods

There are two basic methods to record rhythm data into the M1 sequencer. The first uses the M1 keyboard as the controller and internal drum sounds. You can also use this method with alternate drum sounds produced by an external MIDI drum machine. The second method employs a drum machine as the controller and can use the drum machine sounds, the internal M1 drum sounds or both.

A Little Background on Drum Machines

If you haven't worked with drum machines before, here's a short and sweet explanation.

Nearly every drum machine built today is equipped with MIDI, for two reasons:

First, MIDI makes it possible for the drum machine, which has its own tempo clock, to be *synced up* to a sequencer or another drum machine and play together in perfect time.

Second, MIDI lets you play the sounds of the drum machine from a controller, like a keyboard, MIDI drum pads or a sequencer.

Drum Machines Are Sound Modules

First, drum machines are sound modules. They produce percussion sounds when you play the triggers or pads on the face of the machine. Many mid-priced examples are touch sensitive: When you play the pads forcefully, you get a louder response.

Most drum machines contain the sounds of a basic drum kit:

- *Bass Drum*
- *Snare Drum*
- *Closed and Open Hi Hat Cymbals*
- *Hi Tom*
- *Mid Tom*
- *Lo Tom*
- *Ride Cymbal*
- *Crash Cymbal*

Also, you might find common percussion sounds of the Latin variety or, in some cases, even the orchestral variety.

Each of the different sounds on a drum machine are assigned a MIDI Note Number, exactly the same way the internal drum kits are set up in your M1.

Drum Machines Are Sequencers

Inside every drum machine is a sequencer built especially for playing the internal drum sounds. You can't use it to record MIDI data from a keyboard controller, but you can use it to record different rhythm patterns, with the internal sounds of the drum machine.

Every drum machine has its own clock that sets the tempo for the internal sequencer. If the machine is equipped with MIDI, this clock can control the tempo of another MIDI-equipped drum machine, and the two can play together in perfect time; it can control a sequencer in the same way.

Method #1 - With a Keyboard Controller

Playing the internal drum kits from the keyboard is as simple as recording and sound program onto a track or pattern. If you're recording onto tracks, record one sound per track (the bass drum, for instance), and then bounce them all together.

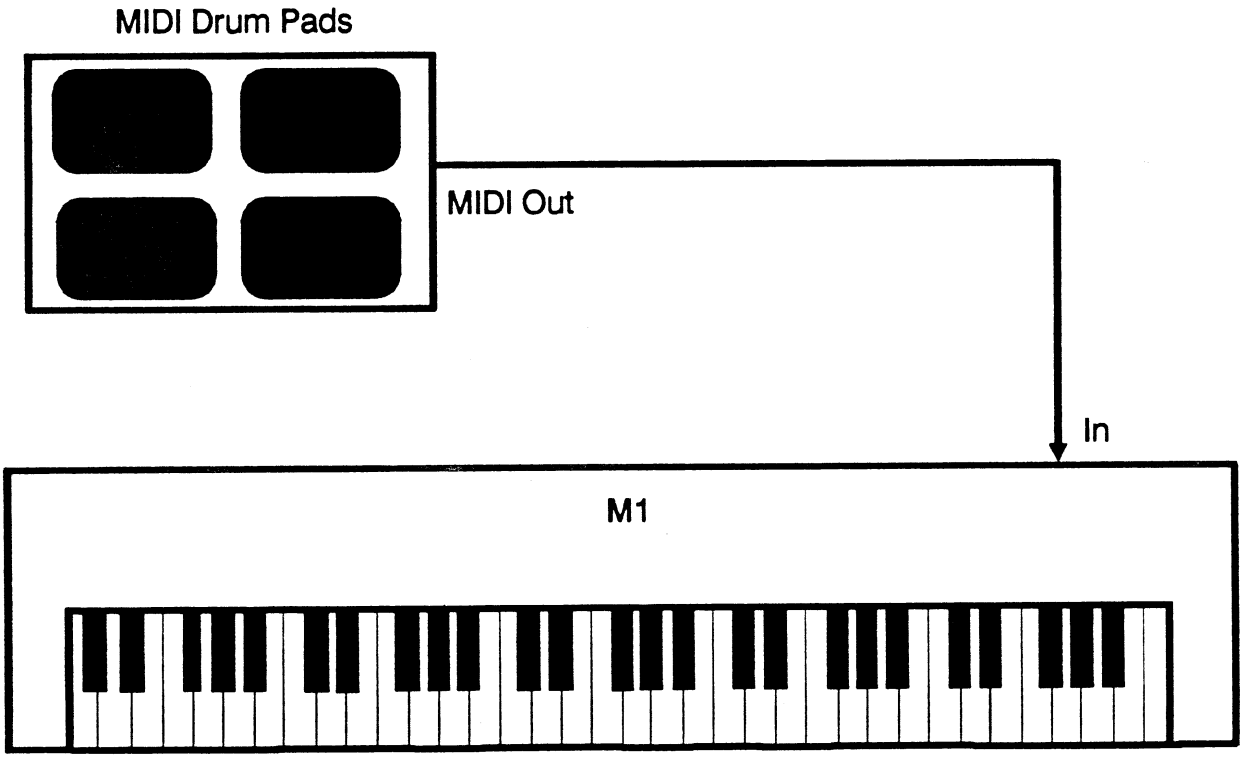
Using patterns is the easiest way to record rhythm because you can overdub sounds as the pattern loops. I find that starting with the bass drum and then adding the snare, open and closed hi hat and percussion, in that order, works best. Everyone has their own preference, but the procedure is the same.

The M1 keyboard is the most convenient controller to use, since it's also used to input instrumental parts. It can provide adequate dynamic variety for the percussion sounds, yet some techniques such as a roll or flam are beyond the capability of a keyboard.

The best controller for the job is one made especially for drummers called a MIDI Drum Pad (or variations thereof). If you hook up a MIDI drum controller to your M1 as a master device, you can use it to record drum parts onto the sequencer.

Using a MIDI Drum Pad Controller

1. Hook up the MIDI Drum Pad Controller to your M1 like this:



2. On the M1, select the Track Parameter Page (Function 4/Page 1) and assign a drum kit sound program to a track.

3. Select the MIDI Channel Page (Function 1/Page 4) and assign an unused MIDI channel to the track.

4. Return to the Record/Play Page and select the drum program track as the Record Track.

5. On the MIDI Drum Pad Controller, set the transmit channel to correspond to the channel assigned to the Record Track.

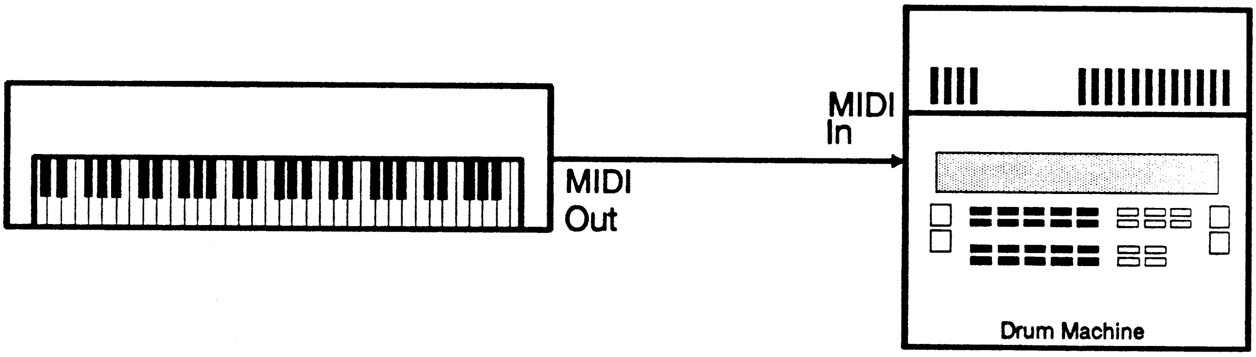
6. Play the drum controller and you should hear the M1 drum kit sounds respond.

7. A performance played on the drum pad controller can now be recorded onto the M1 sequencer.

Using an External Drum Machine

You can increase the rhythm track possibilities by adding drum machine sounds to the internal drum kits.

Hook Up Your System This Way:



Before you get started, you must make sure that all of the sounds that you'll need on the drum machine are accessible from your controller.

If necessary, you must match up MIDI Note Numbers on the drum machine to the keys on the keyboard.

1. Set the drum machine and the Record Track on your M1 to the same MIDI channel.

2. Select the Track Status Page (Function 1/Page 3) and set the track to EXT. This way the M1 won't play internal sounds while you control the drum machine sounds.

3. Play the keyboard and find what keys trigger what sounds. Most drum machines are set up to correspond to the five-octave keyboard in this way:

C2 (the bottom key) - Bass Drum/MIDI Note #36

D2 - Snare/#38

F2 - Low Tom/#41

F#2 - Closed HiHat/#42

A2 - Mid Tom/#45

A# 2 - Open HiHat/#46

B2 - Hi Tom/#47

C#3 - Crash Cymbal/#49

D#3 - Ride Cymbal/#51

Various percussion instruments are scattered above the cymbals generally.

If your drum machine doesn't respond to the keyboard in the exact same order as I listed, don't worry unless the basic sounds are NOT triggering at all from the controller. If this is the case, change the Note Numbers of the missing sounds on the drum machine to match a free key on the keyboard.

NOTE: Since MIDI Note Numbers on the keyboard can't be adjusted, the changes you make must be on the drum machine.

Now you can record a performance with the drum machine as a sound module. Add to this the internal drum kit sounds on another track, and you have quite the rhythm section.

Helpful Hint

Cymbal rolls often present a problem. Not only are they articulated very fast, but they always change in volume, most commonly starting softly and crescendoing up to a roar. I use a technique that works well for me in performing a cymbal roll from the keyboard.

Slow the tempo down a bit, but not too much or the end result sounds unnatural. Play the roll as fast as you can at FULL volume. Now, in Event Edit Mode adjust the Velocity values of each event in the roll, beginning with a very low value like 10 and increasing gradually with each note.

In this way you can get effective crescendos and decrescendos on your roll that are smooth as silk.

This technique works well for Timpani rolls also!

Method #2 - From the Drum Machine

The second method is one used by people who have grown accustomed to programing drum parts on the drum machine itself. Here, all the programming is finished on the drum machine, and then the data is simply transferred to a track on the M1.

I recommend this technique only to those of you who own drum machines of a professional quality. Most inexpensive machines have non-touch-sensitive pads and are lacking in functions to record flams and rolls.

In discussing this technique, I won't go into any of the procedures for programming parts on drum machines because they're all different. If you choose to use this method, you're already familiar enough with your instrument that you probably don't need me to tell you how to run it.

The trick to this technique is in the setup. It's quite simple really.

After You've Written The Part Into The Drum Machine:

1. Hook up a MIDI cord from the OUT port on the drum machine to the IN port on the M1. Make sure the Drum Machine is set to Internal Clock.

2. Select the pattern or song on the drum machine you want to record.

3. On the M1, select an empty Record Track and set the MIDI channel assignment to correspond to the sending channel on the drum machine.

4. Set the M1 to receive a MIDI clock by pressing [Global] and selecting the MIDI Global Page (Function 5/Page 1). Set the Clock parameter to EXT. Return to Sequencer Mode.

5. Press [Rec] and then start the drum machine, and the M1 begins recording.

6. When recording is finished, connect the MIDI cord from the OUT port of the M1 to the IN port of the Drum Machine. Set the drum machine to receive the Record track channel (many drum machines can send and receive different channels).

7. Set the M1 back to Internal Clock on the MIDI Global Page. Press [Start/Stop] on the M1 to listen back. The M1 is now playing the drum machine as a sound module. Also, the rhythm data on the M1 can be edited now just like other note data.

NOTE: This is the same procedure to use when dumping data from another sequencer to the M1. Follow all the same steps, just replace the drum machine with the sequencer (see Chapter 4, Data Management).

Chapter 16

Panning & Effects

The final phase in most recording scenarios is panning and effects processing. Skillfully processing the sounds with reverb, delay and chorus effects adds life to otherwise quite ordinary timbres. Flat sounds can be made to sparkle with just a little processing treatment, while other sounds already full of life can be made even more brilliant. The M1 offers 33 different effects, from which two can be chosen for each song.

Panning refers to the placement of sound within the stereo spectrum. On the M1, the 180-degree stereo range is divided into 101 segments from hard left to hard right. Each track can be placed at any one of these divisions.

On the M1, Panning and the Effects are tied so closely together that it's impossible to talk about one without the other. The effects themselves become part of the sound placement equation, which is why they share this chapter. The issue at hand is hinged upon understanding the signal routing possibilities.

We'll begin by following the signal path from track to output.

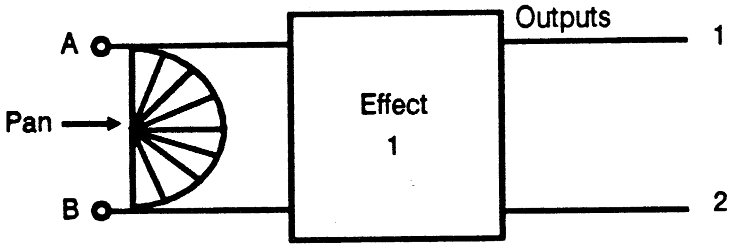
Signal Routing

Panning is actually done in two stages on the M1, before and after the Effect processing. Tracks are assigned to effects inputs and the effects are assigned to the four outputs. When the selection of effect type and balance are considered, the whole picture can be divided into three stages:

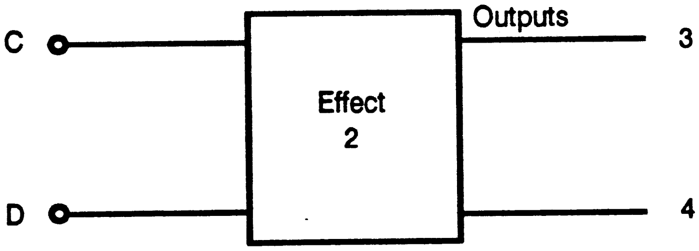
- **Effects Input Assign** - Tracks are assigned one of four Effects Processor inputs.
- **Effect Type and Balance** = One of the 33 available effect types is selected for each Effect Processor and the balance of wet to dry is set.
- **Effect Pan** = Effect 2 can be panned right or left or assigned to mono outputs 3 and 4.

Follow the Signal Path/Stage 1

Tracks are assigned to one of four Effects Inputs - A, B, C or D, or a stereo pan position between A and B. This is done with the Pan parameter on the Track Parameter Page (Function 4/Page 1).



Assigning a track to input A pans the sound to hard left and there are nine pan positions crossing to input B that pans it hard right. These inputs take the sound directly to Effect 1:

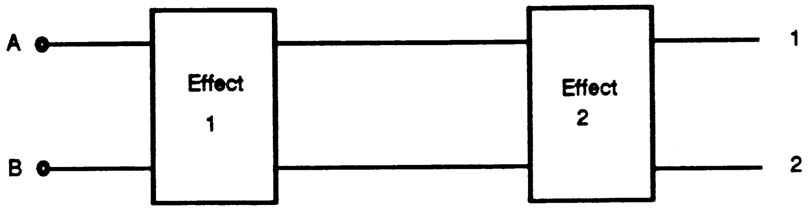


There are no pan positions between effects inputs C and D. Tracks assigned to these inputs are processed by Effect 2.

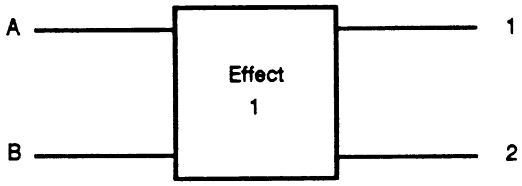
Stage 2

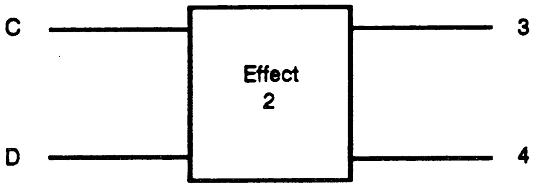
Effects 1 and 2 can be arranged in one of two ways:

In Serial, Where Effect 2 Follows Effect 1:



..or in Parallel:





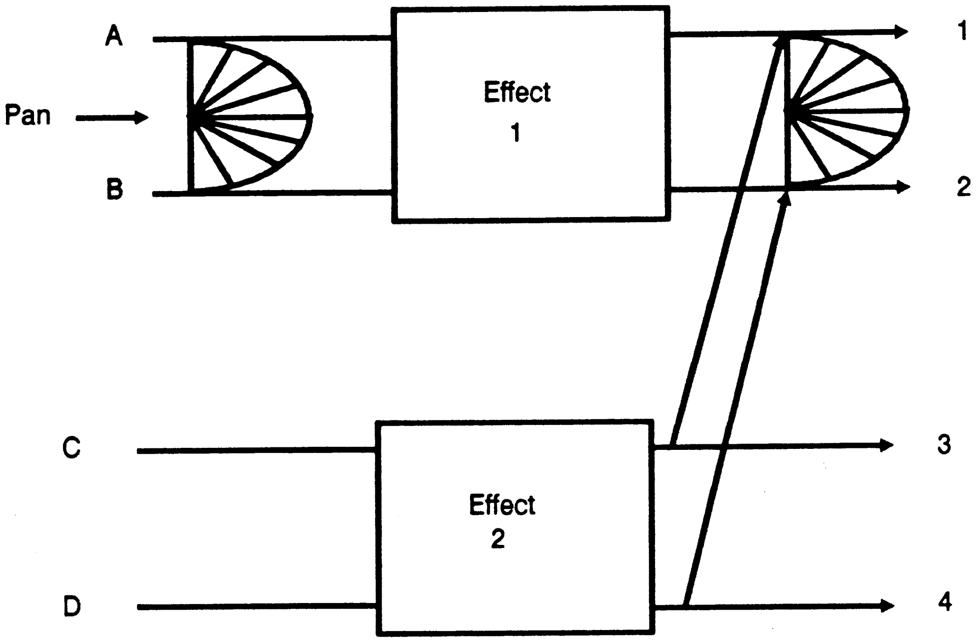
In serial, tracks assigned to outputs A and B are processed by both effects. You get an effect of an effect. In parallel, tracks assigned to A are processed by Effect 1 and tracks assigned to C and D are processed by Effect 2.

Stage 3

Finally, in the third stage, Effect 1 is routed directly to outputs 1/L and 2/R, and the tracks assigned to effects inputs A/B are sent through these outputs in stereo.

Effect 2 is routed directly to outputs 3 and 4, and the tracks assigned to C and D are sent through these outputs in mono. These mono outputs can be used to direct the signal through external processing effects.

In addition, Effect 2 can be routed to stereo Left and Right (outputs 1 and 2) or 99 pan positions in between!!



The essence of what all this means is this:

- Assigning a track to effect inputs A/B allows you to pan the sound to one of 11 stereo pan positions. The sound itself is mono, placed in a stereo field. Inputs A and B are processed by Effect 1 in parallel and by both Effects 1 and 2 when they are arranged in serial.
- Assigning a track to effect input C routes the sound directly to output 3 that can *also* be sent to a stereo pan position through outputs 1 and 2. Instead of only 11 pan positions to choose from, you have 111. Again the sound is mono, placed in a stereo field. Input C is processed by Effect 2.
- Assigning a track to effect input D routes the sound directly to output 4 that can *also* be panned Left or Right through outputs 1 and 2 in one of 111 pan positions. The sound is mono in a stereo field and input D is processed by Effect 2.
- Assigning a track to effect inputs C *and* D routes the sound directly to both outputs 3 and 4 and the sound itself can be in stereo when panned left *and* right. Half the sound is on the left (input C) and half on the right (input D). A track assigned to inputs C and D is processed by Effect 2.

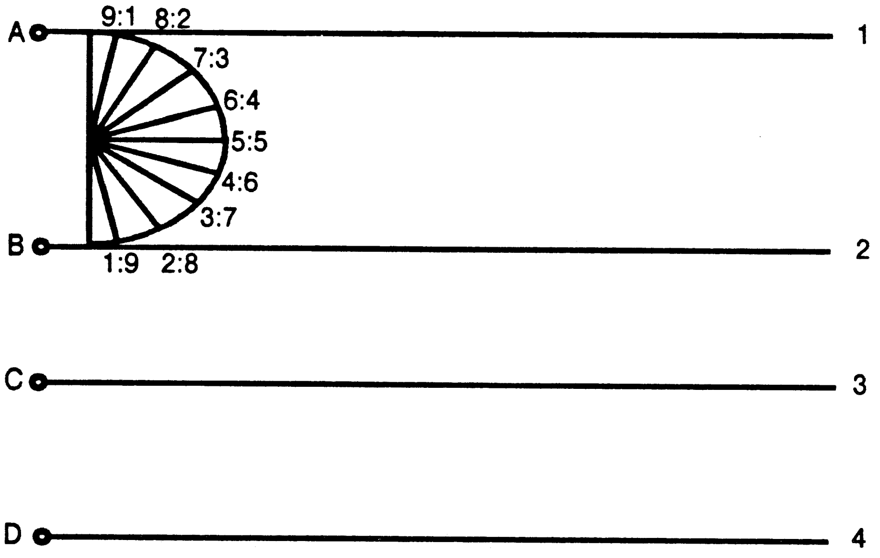
You should approach panning and effects from the beginning of the signal path to the end.

Effects Input Assign

1. In Sequencer Mode, select the Track Parameter Page (Function 4/Page 1).

2. Select the Pan parameter and assign the track to an effects input from these parameter values:

   - A = Processed by Effect 1 and panned hard left.
   - 9:1 - 1:9 = Effect 1 and panned to a position between left and right.
   - B = Effect 1 and panned hard right.
   - C = Effect 2, routed to output 3.
   - D = Effect 2, routed to output 4.



Effect 1 Type

1. Select the Effect 1 Page (Function 8/Page 1).

2. Select the effect type from 33 available effects. A complete listing appears on page 46 of your owner's manual.

3. If you don't want any effect at all, select the status parameter to the right of the effect name and turn it to OFF.

Effect 1 Edit

1. Select the Effect 1 Parameter Page (Function 8/Page 2).

2. Adjust the listed parameters to your liking.

It's beyond the scope of this book to detail all the effects parameters. Your owner's manual covers many of the details, complete with visual aids on pages 32 - 47. Look for tips on the effects parameters in the M1 - Sound Programming book from Alexander Publishing.

The Effect 1 type and parameter settings can be copied along with Effect 2 from a Song, Program or Combination (see Effect Copy later this section).

Effect 2 Type/Edit

1. Select the Effect 2 Page (Function 8/Page 3) and select the effect type, or turn the effect off completely.

2. Next select the Effect 2 Parameter Page (Function 8/Page 4) and adjust the parameters (see M1 owner's manual pages 32 - 47).

Effect Copy

The complete Effects setting, including both Effects 1 and 2 and their parameter values, can be copied from another Song, Combination or Program. If you like a particular Effect setting already programmed elsewhere, this is the easiest way to transfer it to the song you're working on.

1. Select the Effect Copy Page (Function 8/Page 6).

2. Select the source type - Song, Combination, Program.

3. Select the source location number - Song 0-9, Combination I00-I99 or Program I00-I99.

4. Select Copy and at the prompt press [Yes] to continue, or [No] to cancel.

Effect Placement

Finally, place the effects in serial or parallel and pan Effect 2 if desired.

1. Select the Effect Placement Page (Function 8/Page 5).

2. Select the arrangement:

- **Serial** - Tracks assigned to A, B or a pan position between them are processed by both effects. Tracks assigned to C and/or D are processed by Effect 2 only when outputs 3 and 4 are panned Left or Right. They are not processed at all when these outputs are not panned.
- **Parallel** - Tracks assigned to A, B or a pan position between them are processed by Effect 1 only. Tracks assigned to C and/or D are processed by Effect 2.

3. Select the Pan settings for outputs 3 and 4. All tracks assigned to effect input C are passed through output 3, tracks assigned to effect input D are passed through output 4.

   - **Off** - At this setting the output is not panned left or right and the signal is sent through output 3 or 4 only.
   - **R** - The output is panned hard right through the stereo outputs 1 and 2.
   - **L** - The output is panned hard left through the stereo outputs 1 and 2.
   - **1:99 - 99:01** - There are 99 pan positions between R and L with 55:45 as direct center. Numbers smaller than 55:45 are closer to right.

Panning and Effect Tips

There are countless tricks that can be done with the setup available on the M1. Here are just a few ideas:

Serial Effects

When two effects are possible on the same signal, you have to think about how the second effect alters the sound of both the dry signal (the sound program) and the first effect. For instance, if you wanted to treat the dry signal with both chorus and reverb, the common method places the chorus before the reverb. In this way the signal is fattened by the chorus and this whole sound is placed in a room environment. If you reversed this arrangement you'd get a chorusing effect on the reverb that can be very nice, although unusual. When you use reverb in Serial, place it in Effect 2 unless you're after something out of the ordinary.

A good way to employ Serial Effects is to put an EQ in Effect 1 to boost or cut certain frequencies that can then be processed with reverb, etc., in Effect 2. In reverse, with the EQ following a reverb, you can accentuate the reverb effect frequencies, producing an unusual airy sound.

If you assign tracks to inputs C/D and the pan outputs 3 and 4, these tracks are processed by Effect 2 only when heard through the stereo outputs 1 and 2. In this way you can single out a track or two in your sequence to pass through an unusual effect such as Flanger or Overdrive in Effect 1 and then pass through a more ordinary reverb effect in Effect 2 with all the other sounds in your recording.

Even when outputs 3 and 4 are panned, the tracks assigned to inputs C/D still pass through 3 and 4 in mono. When a Serial Effects placement is used, these tracks are heard through outputs 3 and 4 without effects processing and through the stereo outputs with processing.

Parallel Effects

Parallel Effects serve fully separate the tracks assigned to inputs A/B and those assigned to inputs C/D. A/B tracks are processed by Effect 1 and C/D tracks are processed by Effect 2.

This arrangement can be particularly useful when you want to use more than one reverb setting on the tracks. For example, you can separate the drum track and process it with a longer delay reverb than the rest of the instruments.

Panning outputs 3 and 4 to the stereo outputs doesn't add Effect 2 to Effect 1.

Stereo Tracks

When a track is panned left or right either through inputs A/B or after the effect by panning outputs 3 and 4, the sound itself is mono in a stereo field. You hear the sound coming from one direction.

A single track can be heard in full stereo by assigning it to both C and D inputs and then panning outputs 3 and 4 hard left and right. You hear the sound coming from both sides and are effectively surrounded by it.

Since each different sound in the drum kit sound programs are already panned, you may like to try setting up the drum track this way. It can sound massive when treated with a nice reverb setting.

Chapter 17

Additional Features

There are two important functions that have not been addressed as yet. I've reserved them for this addendum chapter because they deserve particular attention. They are programmable tempo and multi-channel recording.

Programmable Tempo

Tempo variations are key to expressive music. Of course, this depends on the music genre. Dance music for instance maintains a constant tempo and so does most pop/rock music, but occasionally there are even exceptions to these rules. Most instrumental music including varying styles ranging from orchestral to jazz employ tempo variations as a form of expression.

You can program subtle tempo variations into the M1 sequencer in two ways - *Real Time and in Event Edit.*

Real Time Tempo Changes

After setting the Basic Tempo, the tempo can be changed as the sequence plays using the Data Slider. If the sequencer is recording as these tempo changes are made, they are recorded onto the selected Record Track.

1. On the Record/Play Page, select an empty Record Track and press [Rec].

2. Press [Start/Stop] and as the sequencer records, change the tempo value with the Data Slider or [Up/Down] buttons.

3. After recording the changes, they can be edited in Event Edit Mode (see Tempo/Event Edit Mode below).

4. When you're satisfied with the tempo changes, you can Bounce the tempo track to any track containing recorded data. You can still edit the tempo changes after they've been bounced because they tempo change data is on it's own Control Change number (CC# 107).

Editing and Inserting Tempo Changes

You can edit tempo changes recorded in Real Time or insert new tempo changes one at a time in Event Edit Mode. Tempo changes can be inserted into any track containing data without disturbing the data already there.

1. Select the Event Edit Page (Function 7/Page 1).

2. Select the track you want to edit or input tempo changes onto. Press [Rec] and [Start/Stop] and the Event Edit display comes up on the screen.

3. The tempo change data is listed as Control Change number 107 with a value range from 00 - 127.

NOTE:The value is represented in standard MIDI MSB (most significant byte) degrees and doesn't represent the number of beats per minute. The ratio between the event value that's displayed on the screen and the actual number of beats per minute can vary with regard to Basic Tempo setting. On the average it's one beat per minute degree for every two MIDI values. A value of 64 means no change to the Basic Tempo. Values higher than 64 increase the tempo while those below 64 slow the tempo.

4. Edit existing tempo changes by adjusting the value.

5. Insert Tempo Changes by pressing [INS] and then:

- Change the data type to CTRL (Control)
- Select Control Change number to 107
- Specify the controller value from 0 - 127 (64 represents no change to the basic tempo setting).

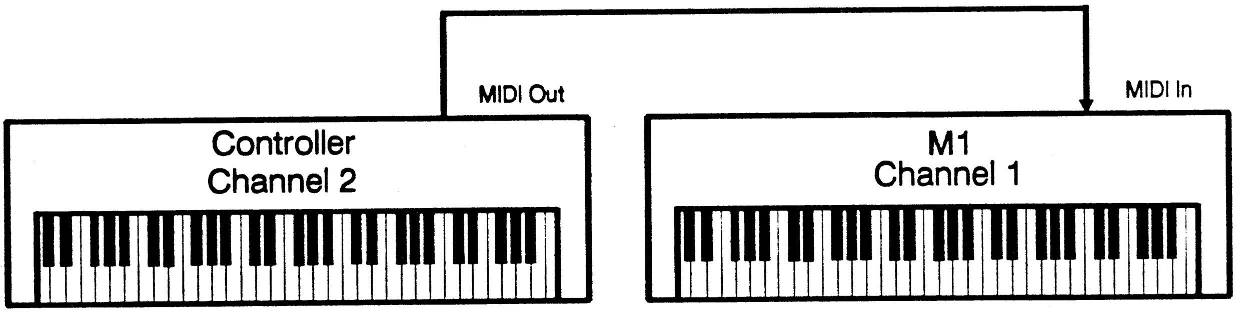
Jam Session

Because the M1 can record more than one channel at once, it can receive up to eight channels of data from another sequencer or external MIDI controller. The method for transferring sequence data in real time from another sequencer uses the M1's Multi-channel recording capability and is discussed in Chapter 4, Data Management. While this is a primary function for Multi-channel recording it's not the only one.

Using Multi-channel recording you can record a jam session where two players transmitting data from two separate controllers are performing at once onto separate tracks of the sequencer. All you need to do is hook up an external MIDI controller to your M1, such as another keyboard, a guitar controller or MIDI drum pads.

Set Up for Two Players

Hook up an external MIDI controller to the In port of your M1:



Recording in Multi-Channel Mode

1. Select the Track field on the Record/Play Page and set the Record Track to *MLT*.

2. Select the Multi Channel Record Page (Function 0/Page 3) and specify the record tracks (REC). All other tracks should be set to PLAY.

3. Select the MIDI Channel Page (Function 1/Page 4) and assign MIDI channels.

   - One selected record track should be assigned to the M1 Global channel (represented by the letter *G* next to the channel number). This is the channel the M1 keyboard transmits on.
   - The other record track should be assigned to the channel corresponding to the external controller. If the external controller is transmitting on channel 2, assign the record track to channel 2.

4. Return to the Record/Play Page and record data as usual. The performances played on all connected controllers will be recorded on their respective Record Tracks.

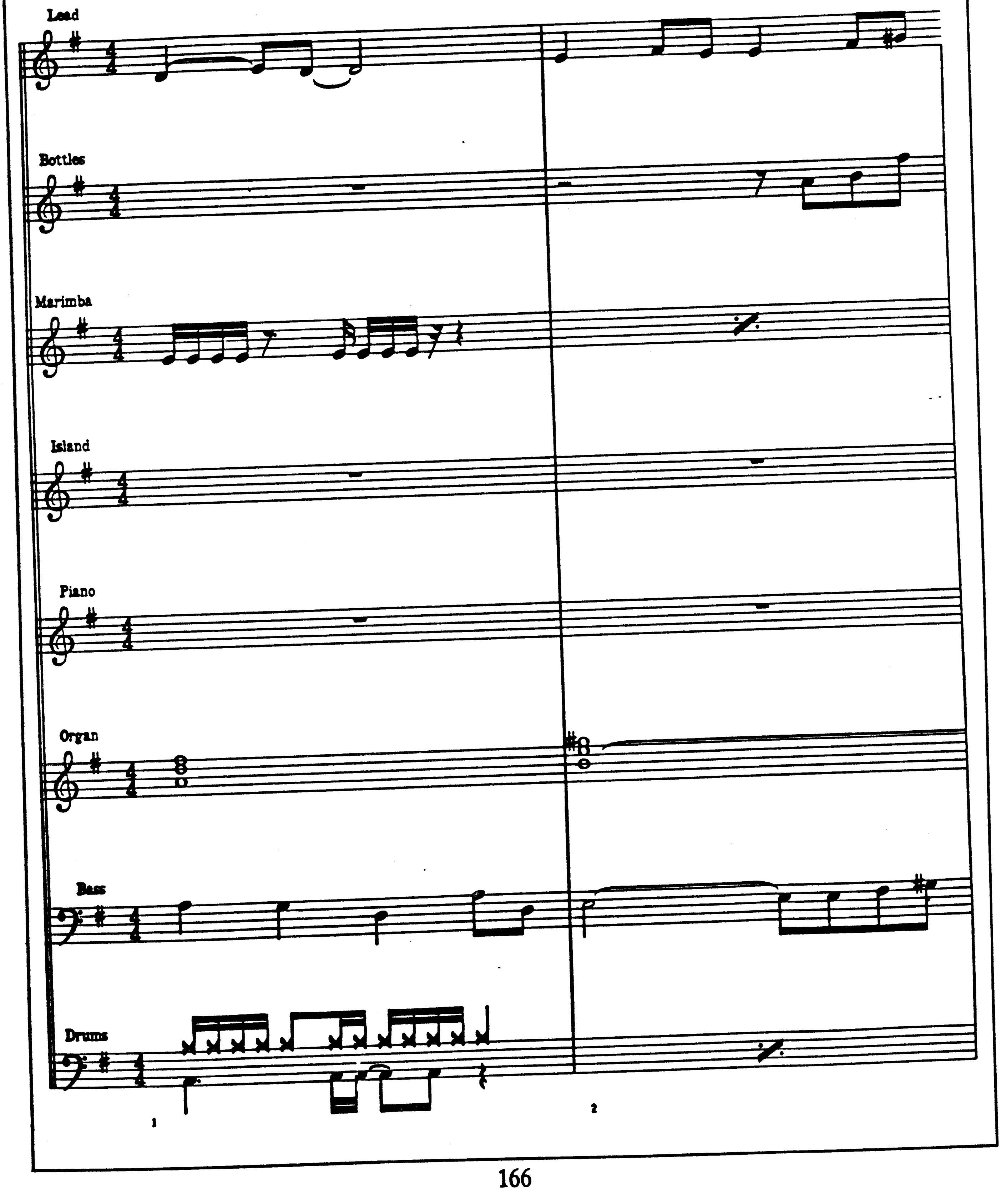
Chapter 18

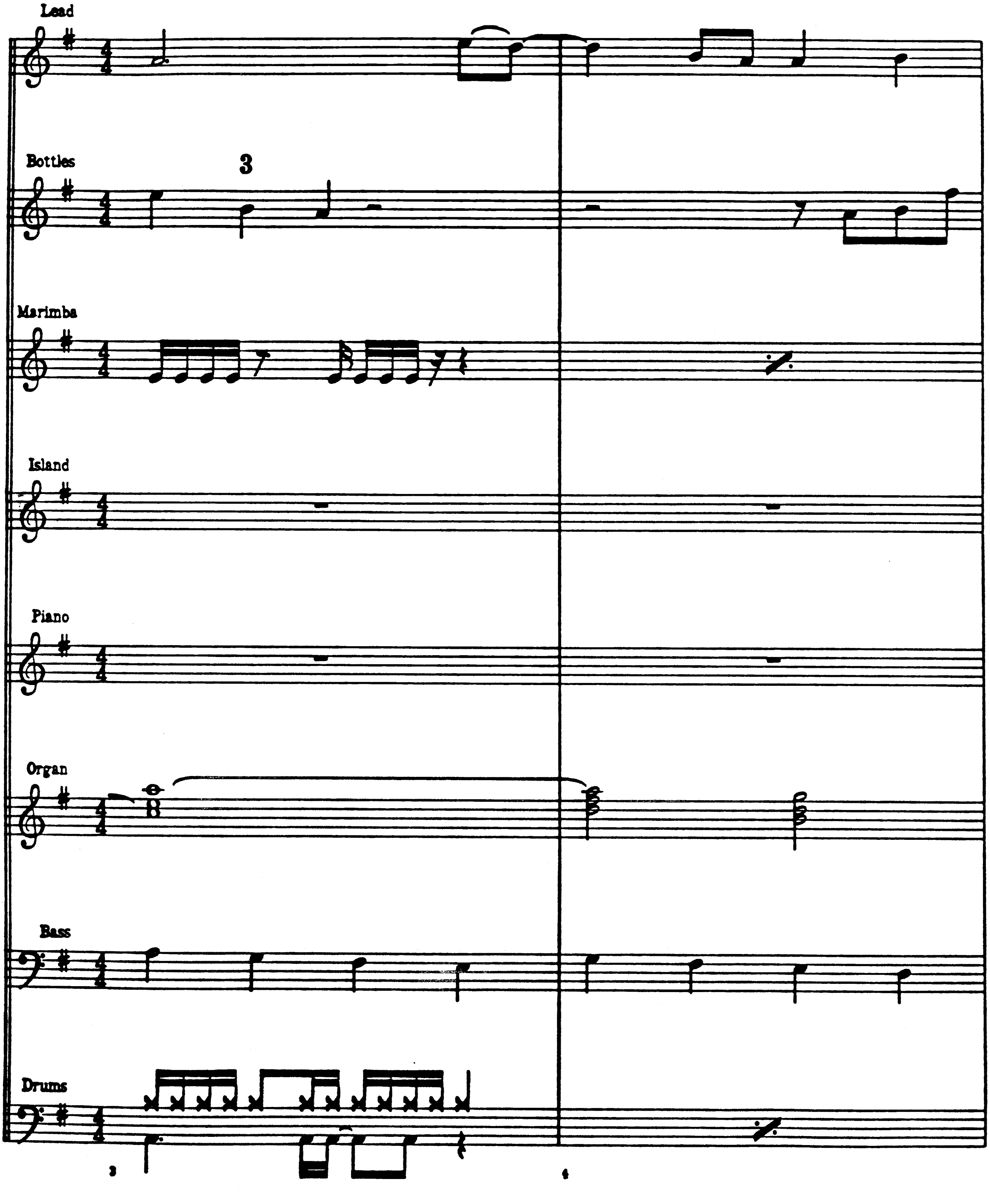
Recording Exercise

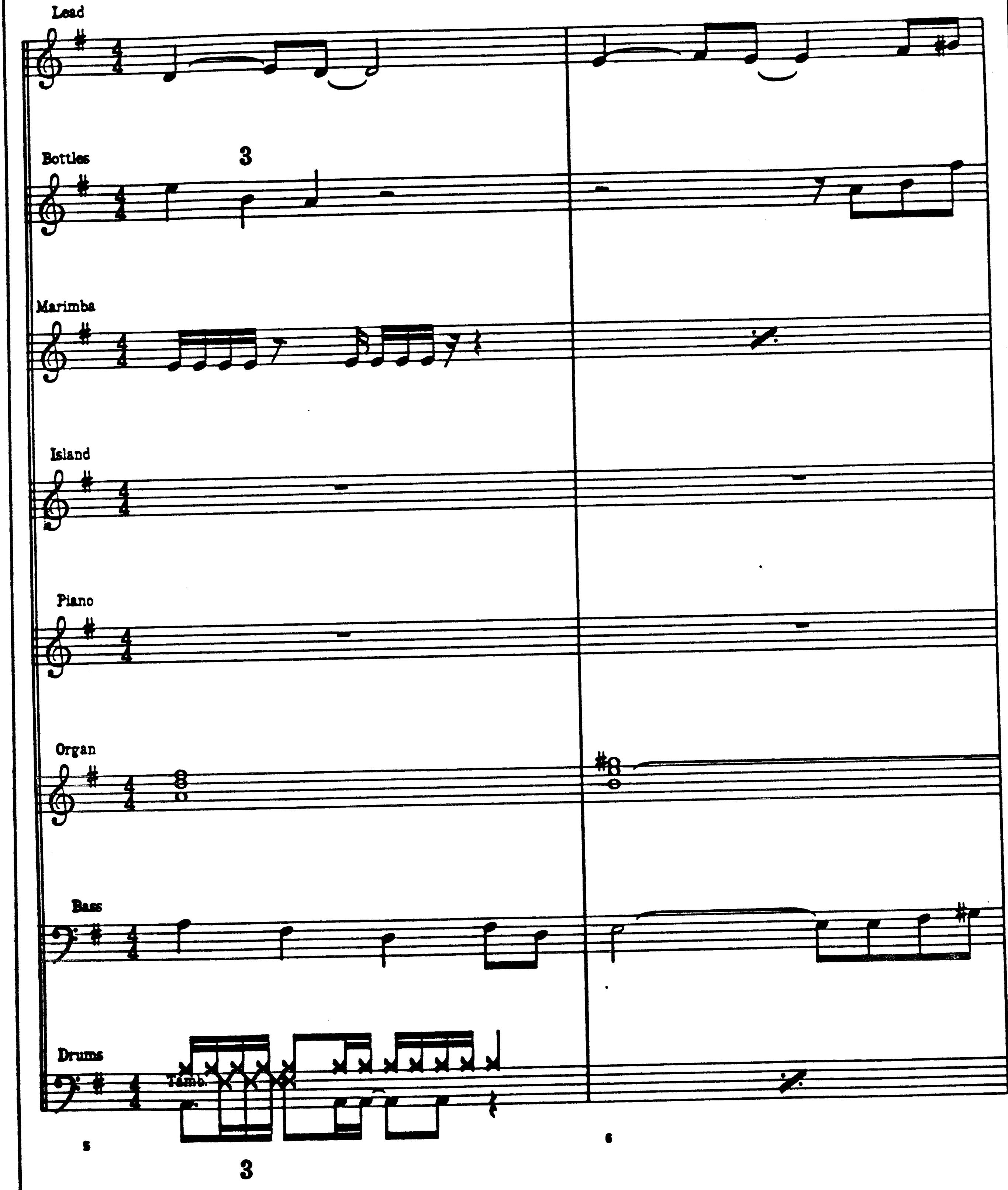
This exercise ties all you've learned throughout this book together in one experiment. You may already have music of your own started and well on its way by now. If this is the case, you may want to skim over the guidelines to pick up any application tips you may be able to use. On the other hand, if you want to challenge your knowledge of the M1 sequencer before jumping into a personal project, follow the steps outlined below and record the piece scored on the following pages.

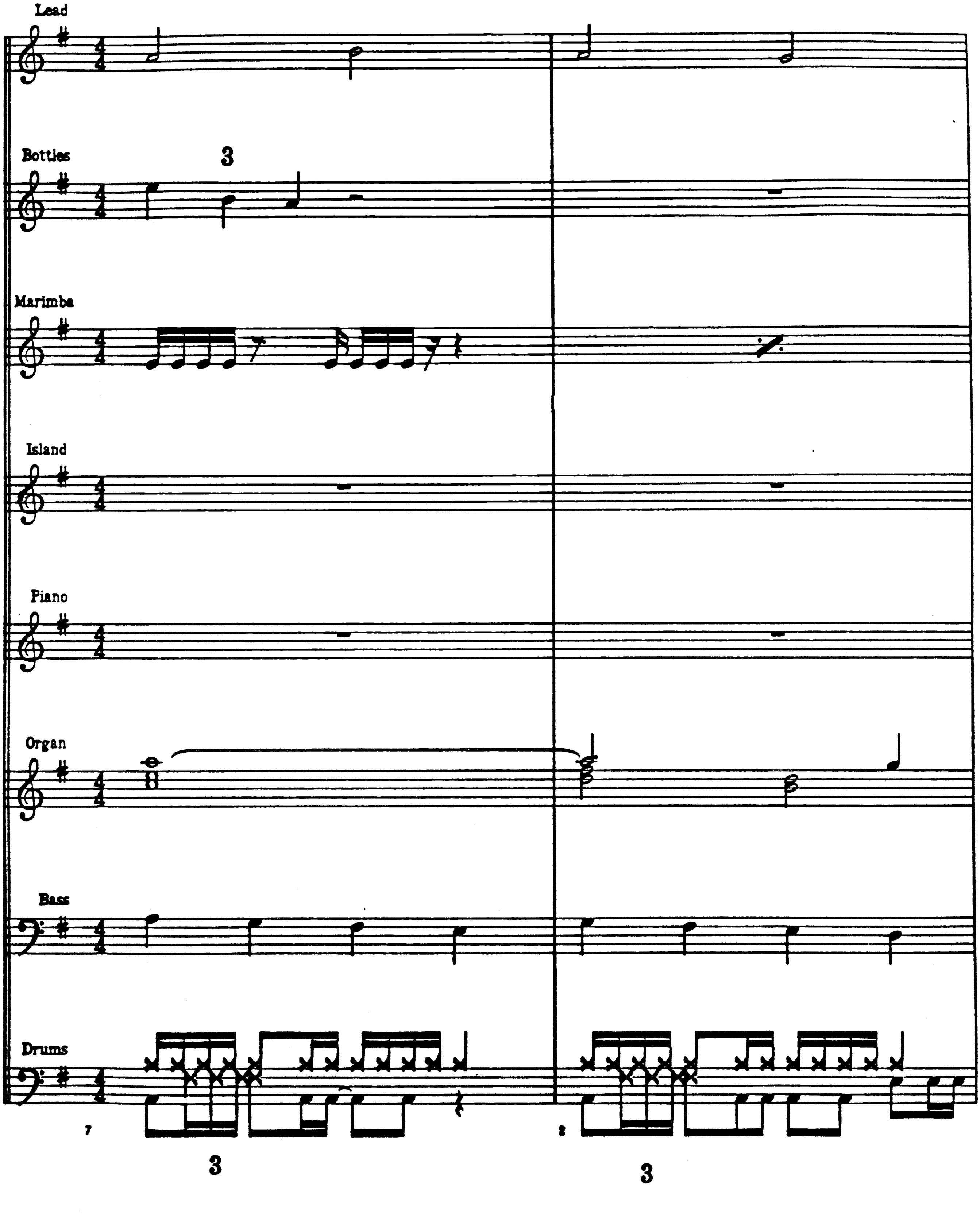
The enclosed tape includes the full arrangement of *Bank On It* plus a separate performance of each part so you can learn the music by ear if you prefer.

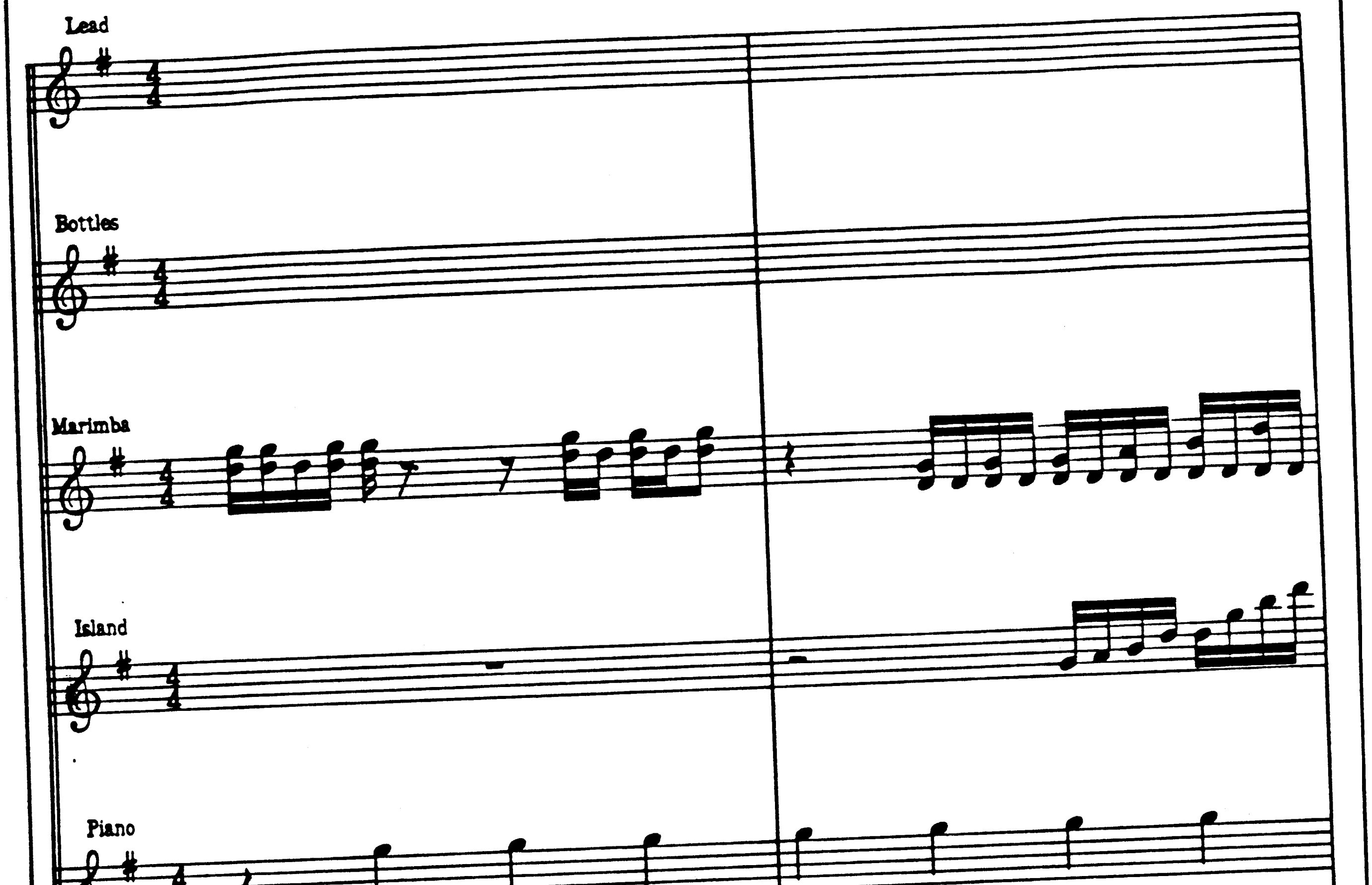
Bank On It

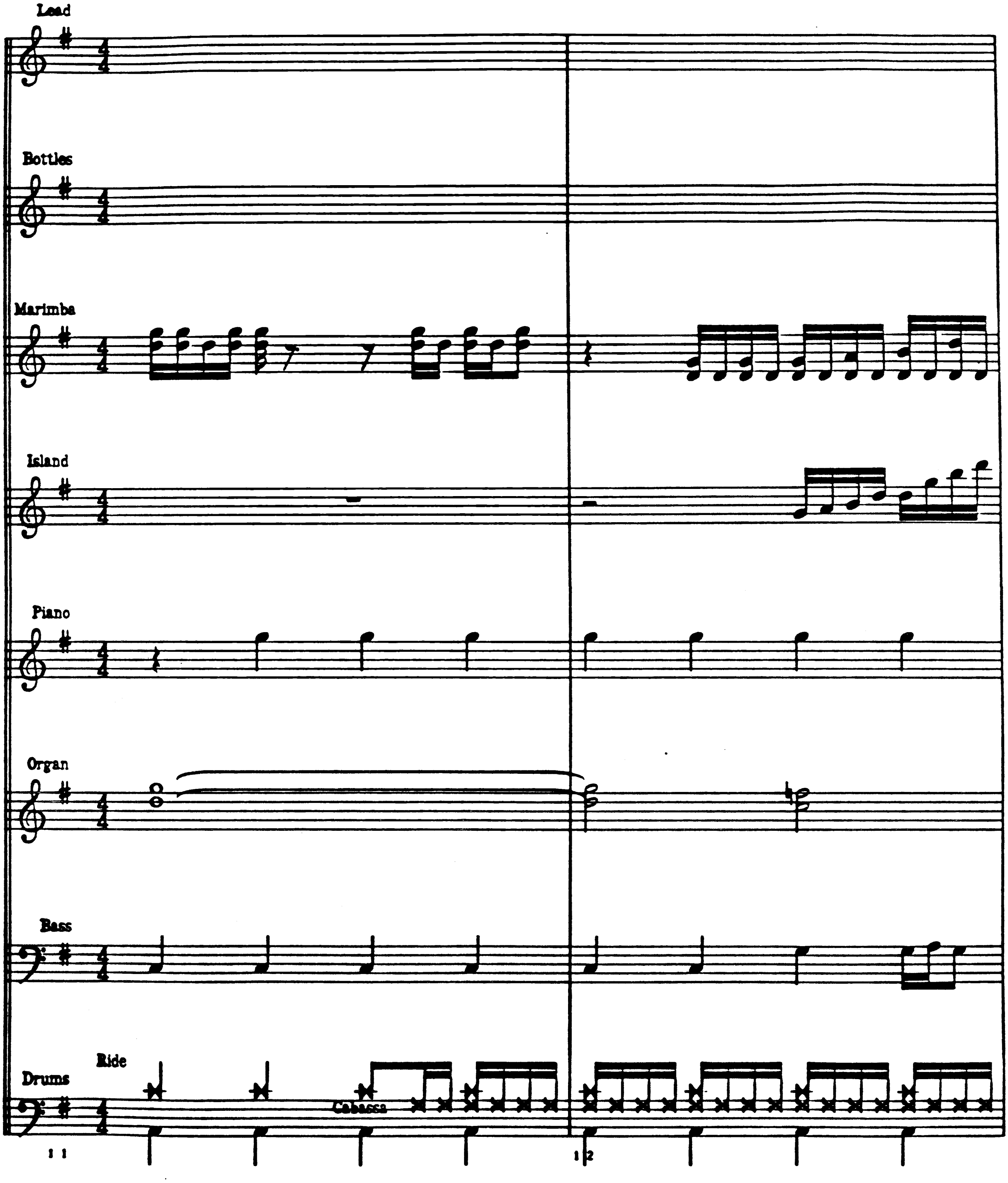

Lead
Bottles
Marimba
Island
Piano
Organ
Bass
Drums
1
2

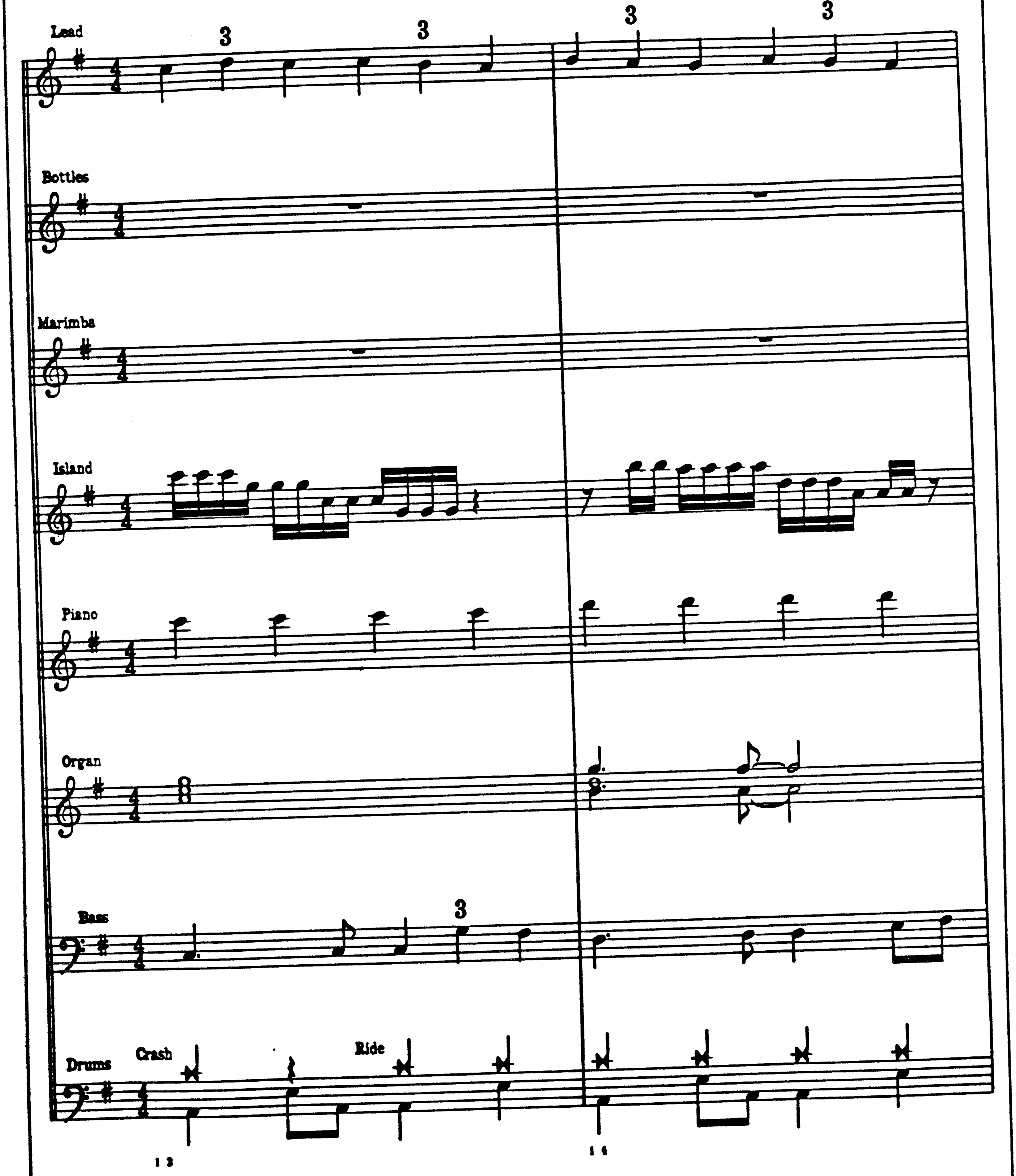

Lead
Bottles
3
Marimba
Island
Piano
Organ
Bass
Drums
3
4

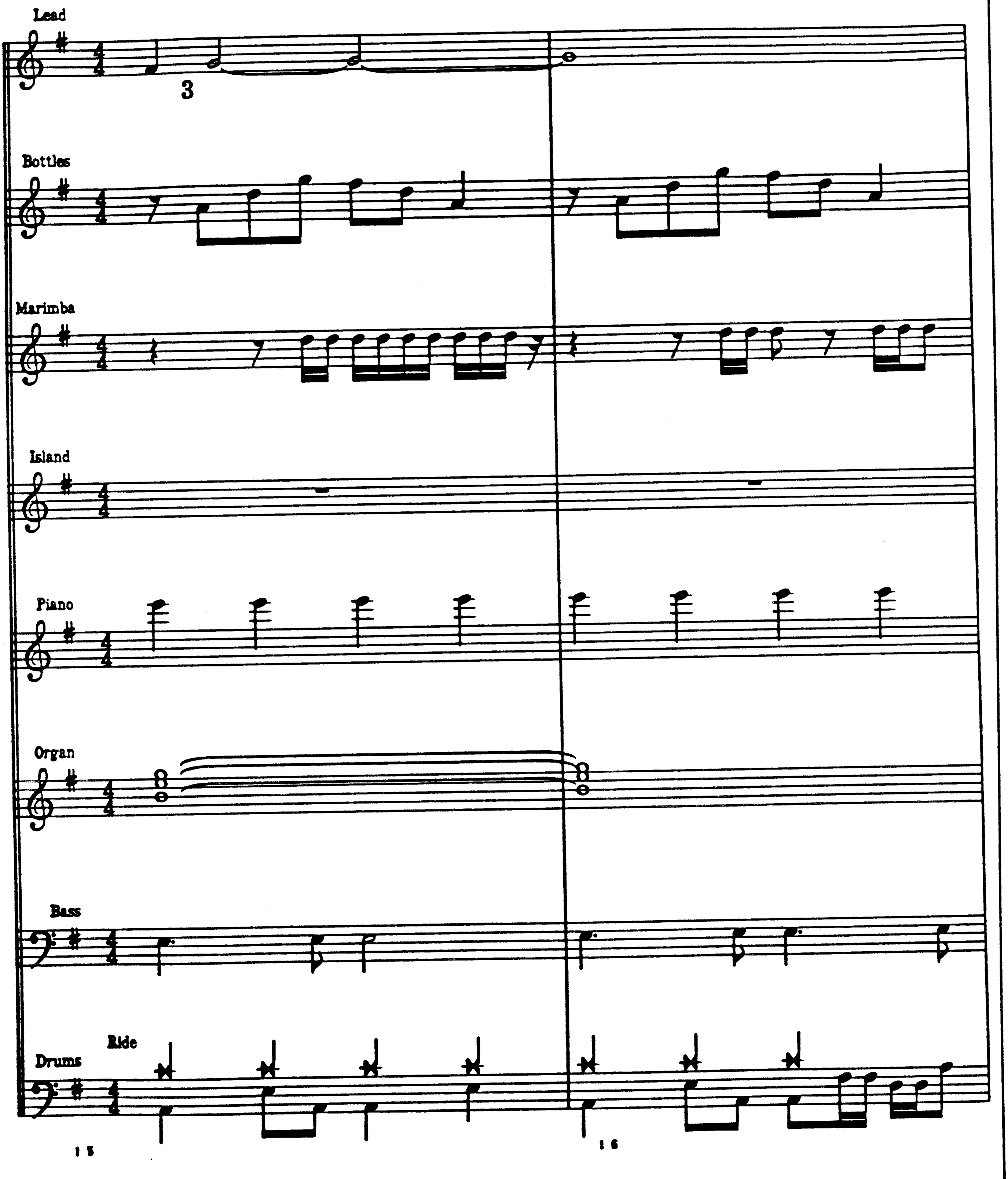

Lead
Bottles
3
Marimba
Island
Piano
Organ
Bass
Drums
Tamb.
5
6
3

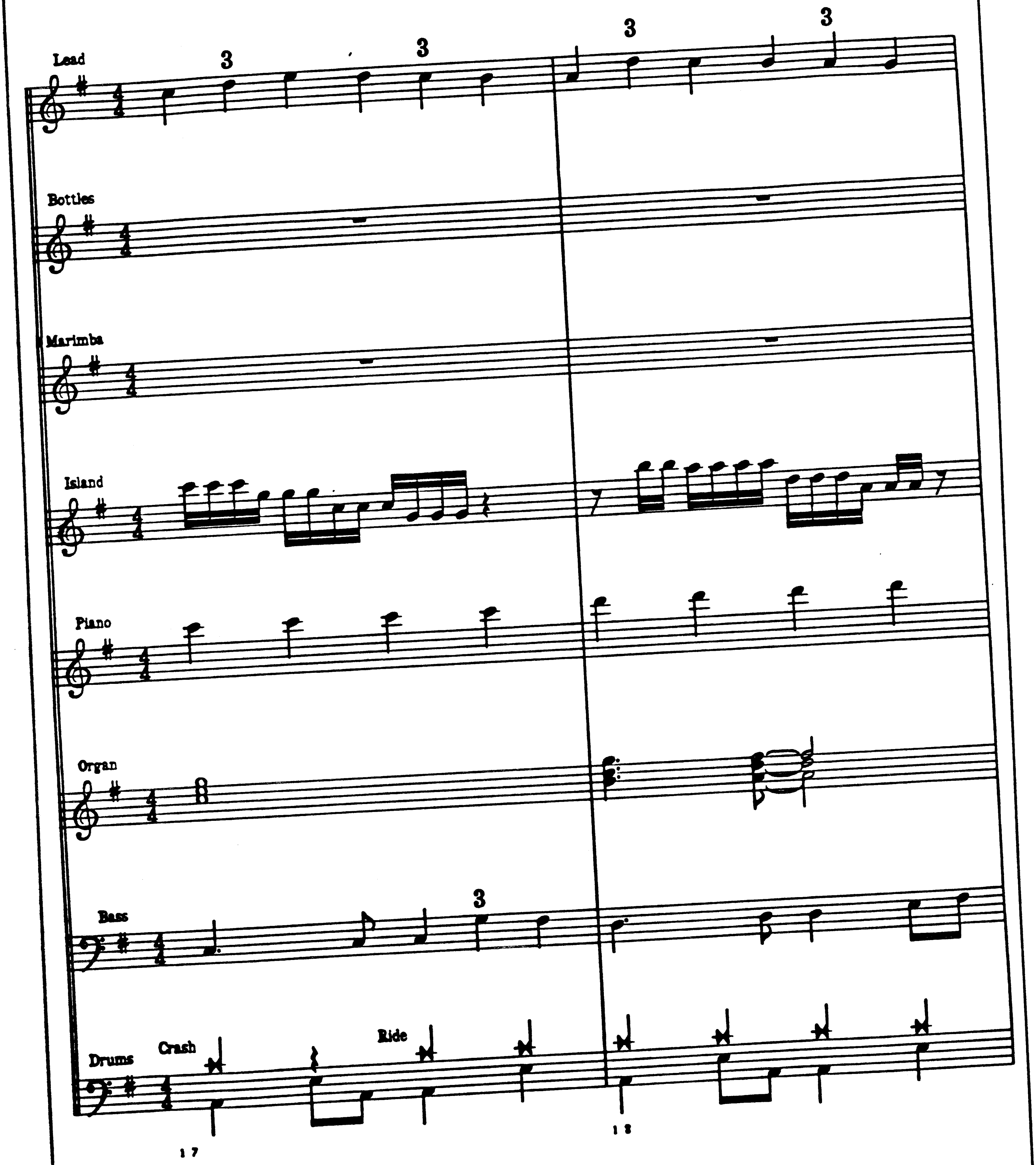

Lead
Bottles
3
Marimba
Island
Piano
Organ
Bass
Drums
7
3
8
3

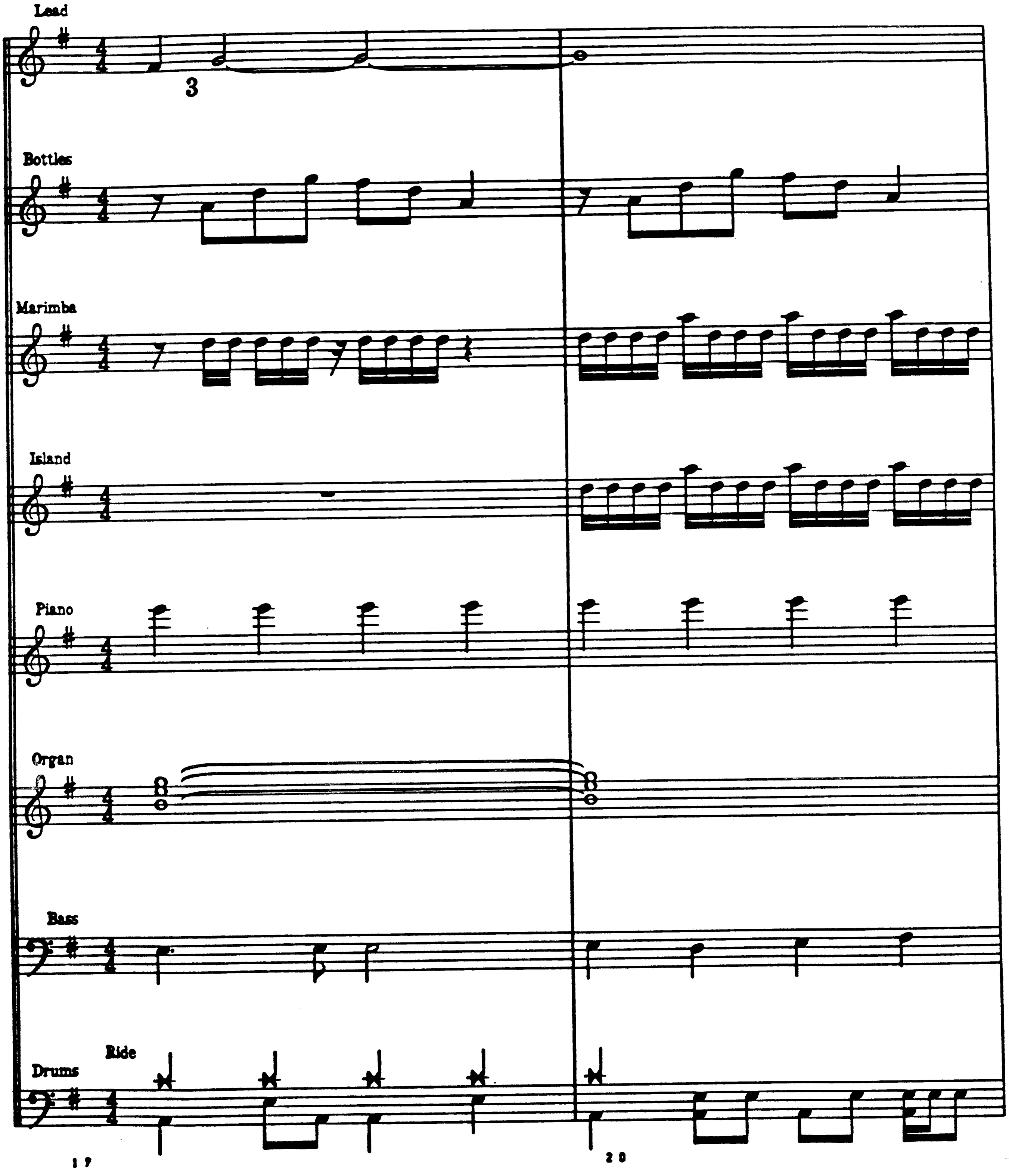

Lead
Bottles
Marimba
Island
Piano
Organ
Bass
Crash
Drums
10


Lead
Bottles
Marimba
Island
Piano
Organ
Bass
Ride
Drums
Cabassa
11
12


Lead
3
3
3
3
Bottles
Marimba
Island
Piano
Organ
Bass
3
Drums
Crash
Ride
13
14


Lead
3
Bottles
Marimba
Island
Piano
Organ
Bass
Ride
Drums
15
16


Lead
3
3
3
3
Bottles
Marimba
Island
Piano
Organ
Bass
3
Drums
Crash
Ride
17
18


Lead
3
Bottles
Marimba
Island
Piano
Organ
Bass
Ride
Drums
19
20

1. Begin by preparing your setup. There are eight sounds used in this arrangement, so start by picking a few that match those on the tape and assign the MIDI channels:

   - Drums - Track 1
   - Bass - Track 2
   - Organ - Track 3
   - Piano - Track 4
   - Marimba - Track 5
   - Steel Drums (Island) - Track 6
   - Bottles (glass breath sound) - Track 7
   - Lead (your choice; I used a square wave synth sound on the verse and a sax sound on the choruses) - Track 8

2. Start off by Initializing a Song. Set the Beat value to 4.

3. Select the Track Parameter Page and set track 1 to a drum sound program. Set the Pan position to 5:5 for now. *If you're using a drum machine instead of the internal drum kit sounds, set the track status to EXT on the Track Status Page.*

   The first step is to record the verse, chorus and bridge drum parts. Each one should be recorded into a separate pattern location.

4. Initialize an unused Pattern location to a Beat value of 4 and a length of eight measures.

5. Select the Pattern Record Real Time or Step Time, whatever you prefer, and record the verse drum part. If you use Real Time, set the Resolution value to 16th notes and your performance should come out just right.

6. When you're finished with the verse drum track, initialize another Pattern location and record the four-bar bridge.

7. Finally, record the eight-bar chorus into a third pattern location.

8. Now, put the three patterns in order (verse, bridge and chorus) into track 1 with the Put/Copy Pattern Page.

9. Return to the Record/Play Page and select Track 2 as the Record Track. If you haven't already, select a bass sound program for this track and set the pan position to 5:5 for now.

10. Record the bass part for all three sections on Track 2.

11. Select Track 3 as the Record Track and assign an organ sound. Record the organ part for the verse, bridge and chorus on Track 3.

12. Select Track 4 as the Record Track and record the marimba part in Step Time because it's so quick and machine-like.

13. Record the piano, steel drum and glass bottles parts on Tracks 5, 6 and 7. Don't record the lead line yet.

This is what you've got so far:

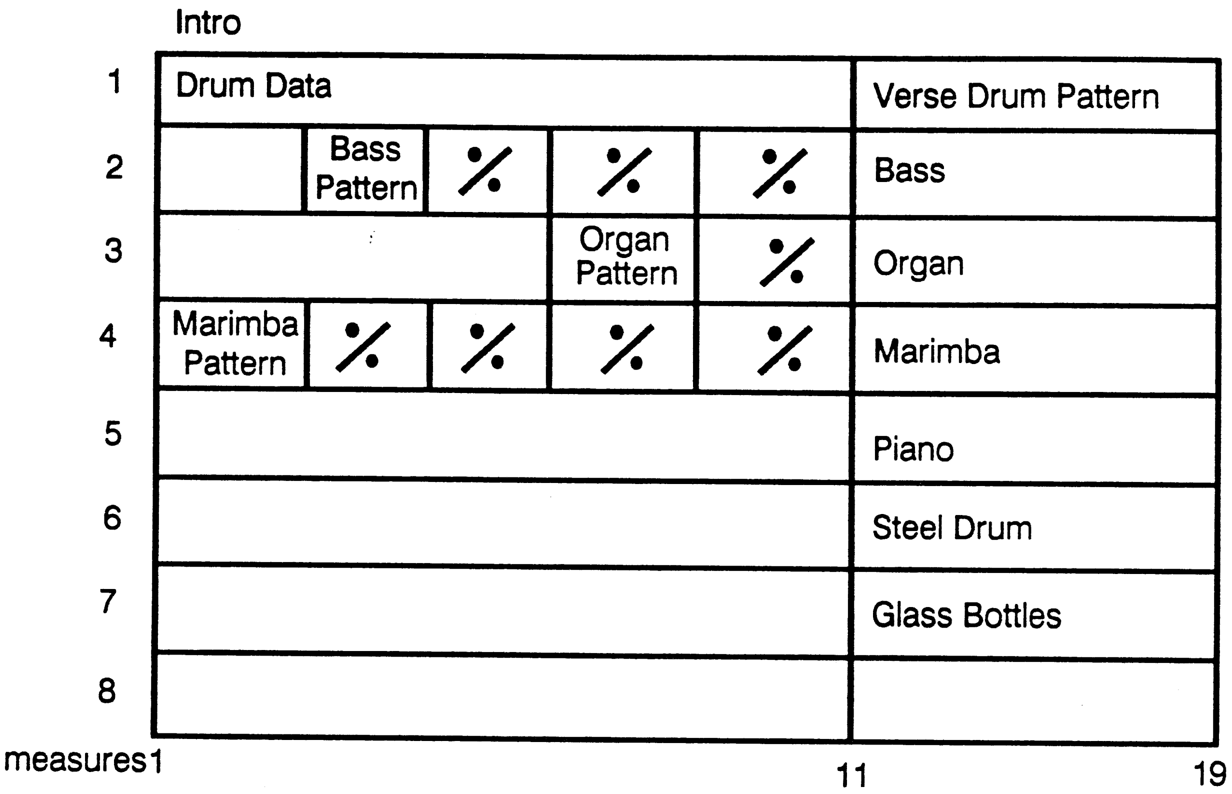
	Verse	Bridge	Chorus
1	Verse Drum Pattern	Bridge Pattern	Chorus Pattern
2	Bass		
3	Organ		
4	Marimba		
5	Piano		
6	Steel Drum		
7	Glass Bottles		
8			

measures 1 8 12 20

14. Now arrange the piece this way:

Intro

The Intro is taken from verse material, so you can use the Copy function to create the part.


Intro
1
Drum Data
Verse Drum Pattern
2
Bass Pattern
%
%
%
Bass
3
Organ Pattern
%
Organ
4
Marimba Pattern
%
%
%
%
Marimba
5
Piano
6
Steel Drum
7
Glass Bottles
8
measures 1
11
19

1. The Intro is 10 measures long, so the verse drum pattern must be lengthened. Insert 10 measures onto the beginning of all Tracks with measure Ins/Del/Erase.

2. Use the Put/Copy Pattern Page to COPY the verse drum pattern to Track 1 beginning with measure 1.

3. Now Copy measures 1 - 4 of Track 1 to Track 1 measure 6. This destroys the last two bars of the original verse drum part, but that's what you need for this Intro.

4. Transfer measures 11 and 12 of Track 4 (marimba) to a new pattern location with the Get Pattern Page. I'll refer to this as Marimba Pattern.

5. Transfer measures 11 - 12 of Track 2 (bass) to a new Pattern location with Get Pattern. I'll refer to this as Bass Pattern.

6. Transfer measures 11 and 12 of Track 3 (organ) to a new Pattern location with Get Pattern. I'll refer to this as Organ Pattern.

7. Put the Marimba Pattern into Track 4 with Put Pattern beginning with measure 1. Put it in a total of five times. The measure field in the Put Pattern display should show measure 11 when you're finished.

8. Put the Bass Pattern into Track 2 with Put Pattern beginning with measure 3. Put it in a total of four times. The measure field should read 11 on the Put Pattern display.

9. Put the Organ Pattern into Track 3 with Put Pattern beginning with measure 7. Put it in two times.

That's your Intro.

Segue

The four-measure segue following the first chorus is simply four measures of the Intro.

Chorus

1	Chorus Drum Pattern	Drum Data	
2	Verse Drum Pattern	Bass Pattern	%
3	Bass	Organ Pattern	%
4	Organ	Marimba Pattern	%
5	Marimba		
6	Piano		
7	Steel Drum		
8	Glass Bottles		

measures 23 31 35

1. Copy measures 1 - 4 of Track 1 (drums) to Track 1 beginning with measure 31.

2. Put the Bass Pattern into Track 2, beginning with measure 31. Put it in twice.

3. Put the Organ Pattern into Track 3, beginning with measure 31. Put it in twice.

4 Put the Marimba Pattern into Track 4, beginning with measure 31, twice also.

That's the Segue.

Second Verse

The second verse is just like the first.

	Seque		2nd Verse
1	Drum Data		Verse Drum Data
2	Bass Pattern	%	Copied Bass Data
3	Organ Pattern	%	Copied Organ Data
4	Marimba Pattern	%	Copied Maimba Data
5			Copied Piano Data
6			
7			Copied Bottles Data
8			

measures 31 35 43

1. Put the verse drum pattern into Track 1 beginning with measure 35.
2. Copy Track 2 (bass) measure 11 for eight bars to Track 2 beginning with measure 35.
3. Copy Track 3 (organ) measure 11 for eight bars to Track 3 beginning with measure 35.
4. Do the same for all remaining tracks.

This is what you should have.

Second Bridge

The second bridge is only half the length of the first.

	2nd Verse	2nd Bridge
1	Drum Pattern	Drum Data
2		Copied Bass
3		Copied Organ
4		Copied Maimba
5		Copied Piano
6		Copied Steel
7		Copied Bottles
8		

measures 35 43 45

1. Copy the Bridge Drum Pattern with the Put/Copy Pattern Page to Track 1 measure 43.

2. Now delete measures 43 and 44 from Track 1 and you're left with the last two measures of the four-bar bridge pattern.

3. Copy Track 2 (bass) measure 21 for two measures to Track 2 measure 43.

4. Copy Track 3 (organ) measure 21 for two measures to Track 3 measure 43.

5. Copy Track 4 (marimba) measure 21 for two measures to Track 4 measure 43.

6. Copy Track 5 (piano) measure 21 for two measures to Track 5 measure 43.

7. Copy Track 6 (steel drum) measure 21 for two measures to Track 6 measure 43.

There's the second bridge.

Double Chorus

The rest of the material is all chorus related so it would be best to transfer all the chorus tracks to Patterns to conserve memory.

	2nd Bridge	Chorus	Chorus
1	Drum Data	Chorus Drum Pattern	%
2	Bass	Chorus Bass Pattern	%
3	Organ	Chorus Organ Pattern	%
4	Marimba	Chorus Marimba Pattern	%
5	Piano	Chorus Piano Pattern	%
6	Steel	Chorus Steel Pattern	%
7	Bottles	Chorus Bottles Pattern	%
8			

1. Initialize six new Pattern locations, each set to a Beat value of 4 and length of eight measures.

2. Use Get Pattern to copy tracks 2, 3, 4, 5, 6 and 7 each to their own Pattern location beginning with measure 23.

When you're finished you should have:

- Chorus Bass Pattern
- Chorus Organ Pattern

- Chorus Marimba Pattern
- Chorus Piano Pattern
- Chorus Steel Drum Pattern
- Chorus Glass Bottles Pattern

3. Put the Chorus Drum Pattern into Track 1 beginning with measure 45. Put it in twice.

4. Put the Chorus bass Pattern into Track 2 beginning with measure 45, twice.

5. Put the remaining chorus patterns into their respective tracks beginning with measure 45, each one twice.

Chorus Organ Pattern - Track 3
Chorus Marimba Pattern - Track 4
Chorus Piano Pattern - Track 5
Chorus Steel Drum Pattern - Track 6
Chorus Glass Bottles Pattern - Track 7

Now you should have this:

Breakdown Section

The Breakdown is loosely based on the Chorus. The marimba, steel drum and glass bottles parts are the same.

1. Put the Chorus Marimba Pattern into Track 4 beginning with measure 61, twice.

2. Put the Chorus Steel Drum Pattern into Track 6 beginning with measure 61, twice.

3. Put the Chorus Glass Bottles Pattern into Track 7 beginning with measure 61, twice also.

4. Record a new Breakdown Drum Pattern into a new pattern location and then Put it into Track 1 beginning with measure 61, twice.

5. Record a new bass part on Track 2 and a new organ part on Track 3 beginning with measure 69 with Punch In Record. Listen to the tape for the idea.

Chorus Outs

Finally, put the Chorus Patterns of all seven parts into their respective tracks beginning with measure 77. Put them each in twice.

Chorus Drum Pattern - Track 1
Chorus Bass Pattern - Track 2
Chorus Organ Pattern - Track 3
Chorus Marimba Pattern - Track 4
Chorus Piano Pattern - Track 5
Chorus Steel Drum Pattern - Track 6
Chorus Glass Bottles Pattern - Track 7

Record the Lead Line

After you're through arranging the Song, record the lead line on Track 8. If you want the sound to change between the verse and the choruses, insert program changes during the bridges and segue sections.

Mix the Volume

Select the Track Parameter Page and set the volume parameter for each track until you reach a desired mix. It may take you back and forth between pages a few times to get it just right.

Panning and Effects

There are a million possibilities but one suggestion would be:

Track 1 Drums - Pan - C & D
Track 2 Bass - Pan - 5:5 (center)
Track 3 Organ - Pan - 5:5
Track 4 Marimba - Pan - 8:2 (left)
Track 5 Piano - Pan - 6:4 (slight left)
Track 6 Steel Drum - Pan - 2:8 (right)
Track 7 Glass Bottles - Pan - 4:6 (slight right)
Track 8 Lead Line - Pan - C & D

Select Large Room for Effect 1 and Ensemble Hall for Effect 2. Arrange them in Parallel and pan output 3 to the Left and output 4 to the Right.

That's all there is to it!

Conclusion

The M1 is an amazing machine. Working with the sequencer section as I researched this book was both fun and educational. I'm truly astounded at the level of technology available in one instrument today. The workstation design is a trend that was long in coming, and I for one am glad it's now here.

DW

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